

## Service

DVP3160K/55/77/78

DVP3166/94,DVP3166X/94

DVP3166K/93

DVP3156/93

## Service

## Service



# Service Manual

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Version 1.1

**CLASS 1  
LASER PRODUCT**



3139 785 32471

**PHILIPS**

## Technical Specifications

<b>TV standard</b>	<b>(PAL/50Hz)</b>	<b>(NTSC/60Hz)</b>	<b>Audio performance</b>
Number of lines	625	525	
Playback	Multi standard	(PAL/NTSC)	
<b>Video performance</b>			
Video DAC	12 bit, 108MHz		
YPbPr	0.7Vpp ---- 75 ohm		
Video output	1Vpp ----- 75 ohm		
<b>Video format</b>			
Digital Compression	MPEG 2 for DVD, SVCD MPEG 1 for VCD DivX®		
<b>DVD</b>	<b>50Hz</b>	<b>60Hz</b>	<b>Connections</b>
Horiz. resolution	720 pixels	720 pixels	YPbPr output Cinch 3x Video output Cinch( yellow) Audio output (L+R ) Cinch (white/red) Digital output 1 coaxial IEC60958 for CDDA/ LPCM IEC61937 for MPEG1/2, Dolby Digital
Vertical resolution	576lines	480 lines	
<b>VCD</b>	<b>50Hz</b>	<b>60Hz</b>	<b>Cabinet</b>
Horiz. resolution	352 pixels	352 pixels	Dimensions (w X h X d) 360 x 37 x 210 mm
Vertical resolution	288lines	240 lines	Weight Approximately 2 kg
<b>Audio format</b>			
Digital	<b>MPEG/AC-3/ PCM</b>	<b>Compressed Digital 16, 20, 24bits fs, 44.1, 48, 96kHz MP3(ISO 9660)</b>	<b>Power consumption</b>
			Power supply Rating 110V-240V; 50/60HZ
			Power consumption <10W
			Power consumption in standby mode <1W

Analogue Sound Stereo  
Dolby surround compatible downmix from Dolby Digital multi-channel sound

**Specifications subject to change without prior notice.**

# Safety instruction, Warning & Notes

## Safety instruction

### 1. General safety

Safety regulations require that during a repair:

- . Connect the unit to the mains via an isolation transformer.
- . Replace safety components indicated by the symbol , only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that after a repair, you must return the unit in its original condition. Pay, in particular, attention to the following points:

- . Route the wires/cables correctly, and fix them with the mounted cable clamps.
- . Check the insulation of the mains lead for external damage.
- . Check the electrical DC resistance between the mains plug and the secondary side:
  - 1) Unplug the mains cord, and connect a wire between the two pins of the mains plug.
  - 2) Set the mains switch the “on” position (keep the mains cord unplug).
  - 3) Measure the resistance value between the mains plug and the front panel, controls, and chassis bottom.
  - 4) Repair or correct unit when the resistance measurement is less than  $1M\Omega$ .
  - 5) Verify this, before you return the unit to the customer/user (ref. UL-standard no. 1492).
  - 6) Switch the unit “off”, and remove the wire between the two pins of the mains plug.

### 2. Laser safety

This unit employs a laser. Only qualified service personnel may remove the cover, or attempt to service this device (due to possible eye injury).

Laser device unit

Type	: Semiconductor laser GaAlAs
Wavelength	: 650nm (DVD)
	: 780nm (VCD/CD)
Output power	: 7mW (DVD)
	: 10mW (DVD /CD)

Beam divergence: 60 degree

Note: Use of controls or adjustments or performance of procedure other than those specified herein, may result in hazardous radiation exposure. Avoid direct exposure to beam.

## Warning

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### 1.General

. All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handing during repair can reduce life drastically. Make sure that, during repair, you are at the same potential as the mass of the set by a wristband with resistance. Keep components and tools at this same potential. Available ESD protection equipment:

- 1) Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable)  
4822 310 10671.

- 2) Wristband tester 4822 344 13999.

. Be careful during measurements in the live voltage section. The primary side of the power supply , including the heat sink, carries live mains voltage when you connect the player to the mains (even when the player is "off"!). It is possible to touch copper tracks and/or components in this unshielded primary area, when you service the player. Service personnel must take precautions to prevent touching this area or components in this area. A "lightning stroke" and a stripe-marked printing on the printed wiring board, indicate the primary side of the power supply.

. Never replace modules, or components, while the unit is "on".

### 2. Laser

- . The use of optical instruments with this product, will increase eye hazard.
- . Only qualified service personnel may remove the cover or attempt to service this device, due to possible eye injury.
- . Repair handing should take place as much as possible with a disc loaded inside the player.
- . Text below is placed inside the unit, on the laser cover shield:

**CAUTION: VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO BEAM.**

Notes: Manufactured under licence from Dolby Laboratories. The double-D symbol is trademarks of Dolby Laboratories, Inc. All rights reserved.

## Notes

### Lead-Free requirement for service

#### IDENTIFICATION:

Regardless of special logo (not always indicated) 

One must treat all sets from **1.1.2005** onwards, according next rules.

**Important note:** *In fact also products a little older can also be treated in this way as long as you avoid mixing solder-alloys (leaded/ lead-free). So best to always use SAC305 and the higher temperatures belong to this.*

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free solder alloy Philips SAC305 with order code 0622 149 00106. If lead-free solder-paste is required, please contact the manufacturer of your solder-equipment. In general use of solder-paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free solder alloy. The solder tool must be able
  - To reach at least a solder-temperature of 400°C,
  - To stabilize the adjusted temperature at the solder-tip
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360°C – 380°C is reached and stabilized at the solder joint. Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips switch off un-used equipment, or reduce heat.
- Mix of lead-free solder alloy / parts with leaded solder alloy / parts is possible but PHILIPS recommends strongly to avoid mixed solder alloy types (leaded and lead-free). If one cannot avoid, clean carefully the solder-joint from old solder alloy and re-solder with new solder alloy (SAC305).

- Use only original spare-parts listed in the Service-Manuals. Not listed standard-material (commodities) has to be purchased at external companies.
- Special information for BGA-ICs:
  - always use the 12nc-recognizable soldering temperature profile of the specific BGA (for de-soldering always use highest lead-free temperature profile, in case of doubt)
  - lead free BGA-ICs will be delivered in so-called 'dry-packaging' (sealed pack including a silica gel pack) to protect the IC against moisture. After opening, dependent of MSL-level seen on indicator-label in the bag, the BGA-IC possibly still has to be baked dry. This will be communicated via AYS-website.

Do not re-use BGAs at all.

- For sets produced before 1.1.2005, containing leaded soldering-tin and components, all needed spare-parts will be available till the end of the service-period. For repair of such sets nothing changes.
- On our website:

[www.atyourservice.ce.Philips.com](http://www.atyourservice.ce.Philips.com)

You find more information to:

BGA-de-/soldering (+ baking instructions)  
Heating-profiles of BGAs and other ICs used in  
Philips-sets

You will find this and more technical information within the "magazine", chapter "workshop news".

For additional questions please contact your local repair-helpdesk.

## Mechanical and Dismantling Instructions

### Dismantling Instruction

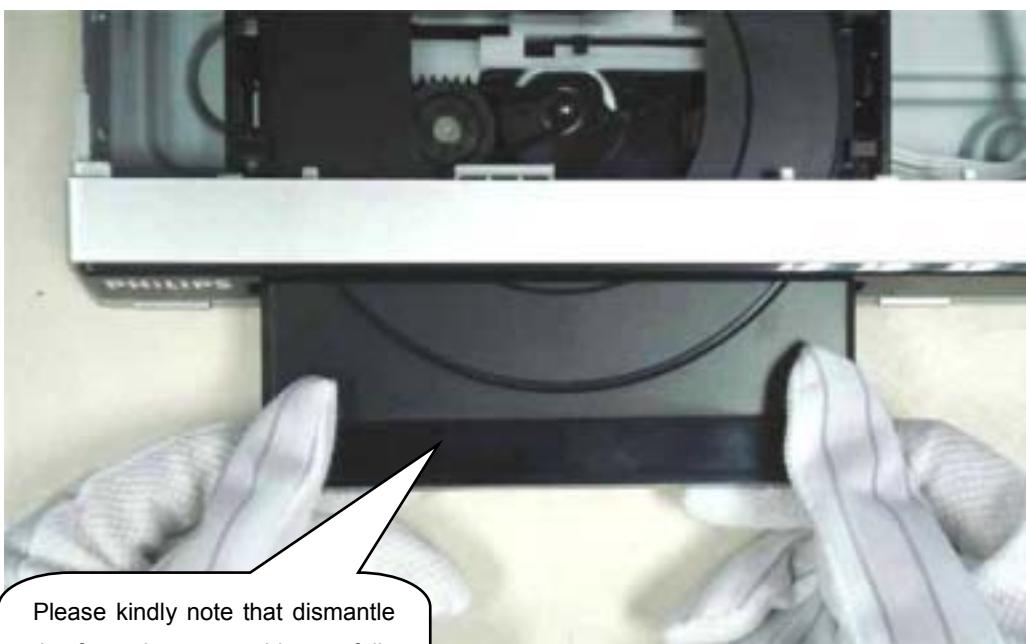
The following guidelines show how to dismantle the player.

**Step1:** Remove 5 screws around the Top Cover, then remove the Top Cover (Figure 1).



Figure 1

**Step2:** If it is necessary to dismantle Loader or Front Panel, It should be remove the Front door assembly first. (Figure 2)  
Note: Make sure to operate gently otherwise the guider would be damaged.



Please kindly note that dismantle the front door assembly carefully to avoid damage tray and the front door assembly.

Figure 2

## Mechanical and Dismantling Instructions

### Dismantling Instruction

**Step3:** If the tray can't open in normal way, you can make it through the instruction as below (Figure 3).  
Note: Make sure to operate gently otherwise the guider would be damaged.

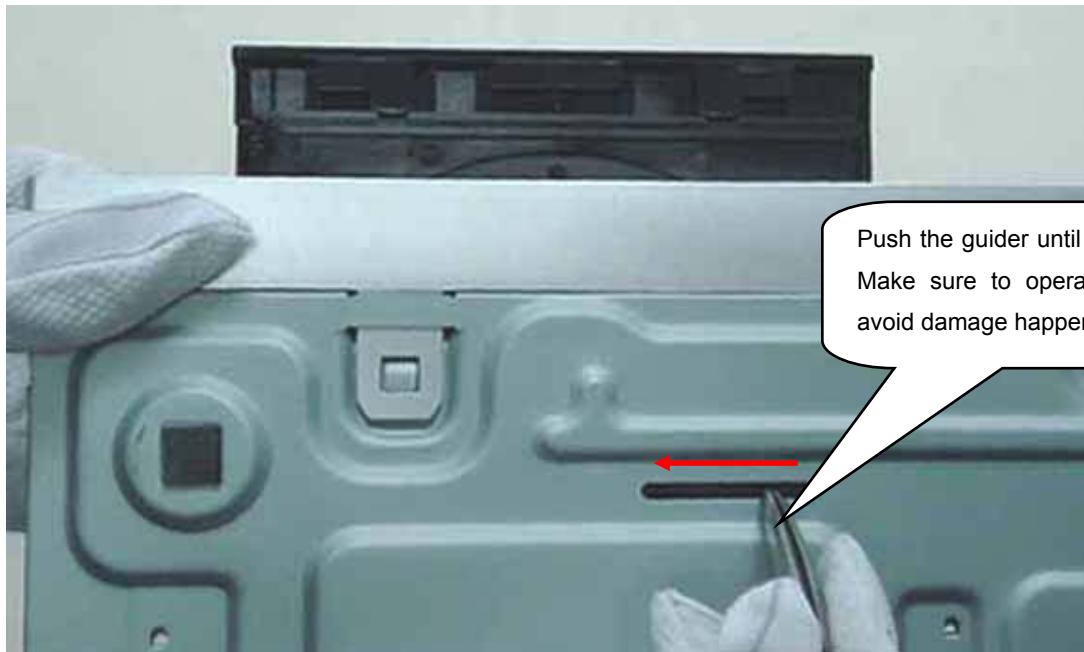


Figure 3

**Step4:** Dismantling Loader, disconnect the 3 connectors aiming in the below figure, and remove 1 screw around the Loader. (Figure 4)

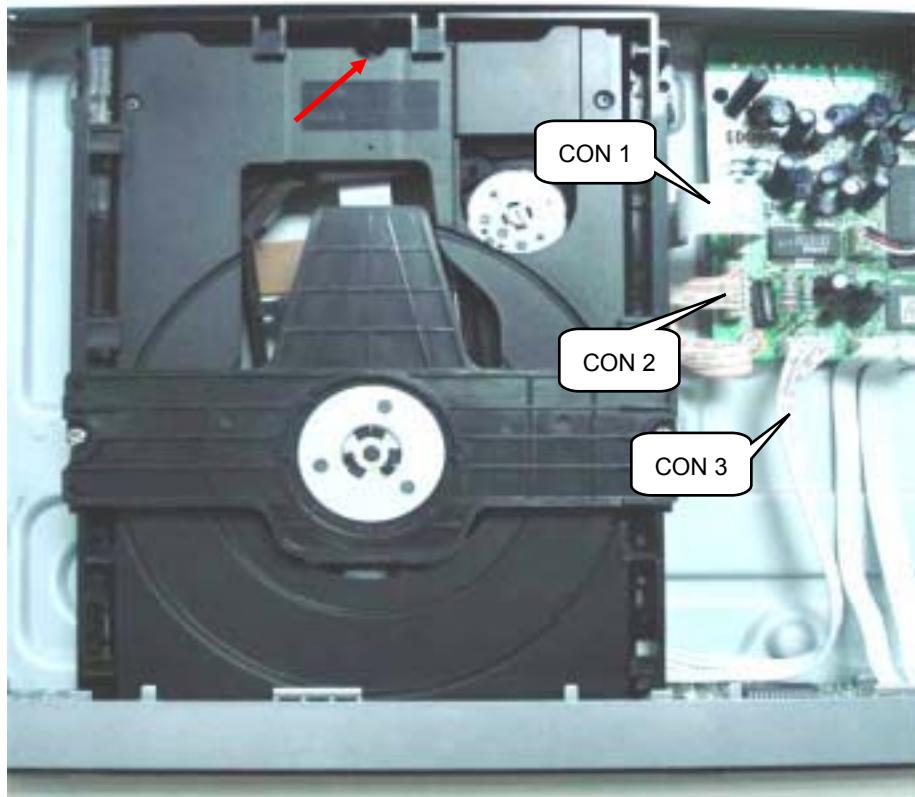


Figure 4

## Mechanical and Dismantling Instructions

### Dismantling Instruction

**Step5:** Dismantling Front Panel, disconnect the 3 connector, then release the snaps on the both sides of Front Panel and bottom cabinet , then gently pull the Panel out from the set. (Figure 5 & 6 & 7)

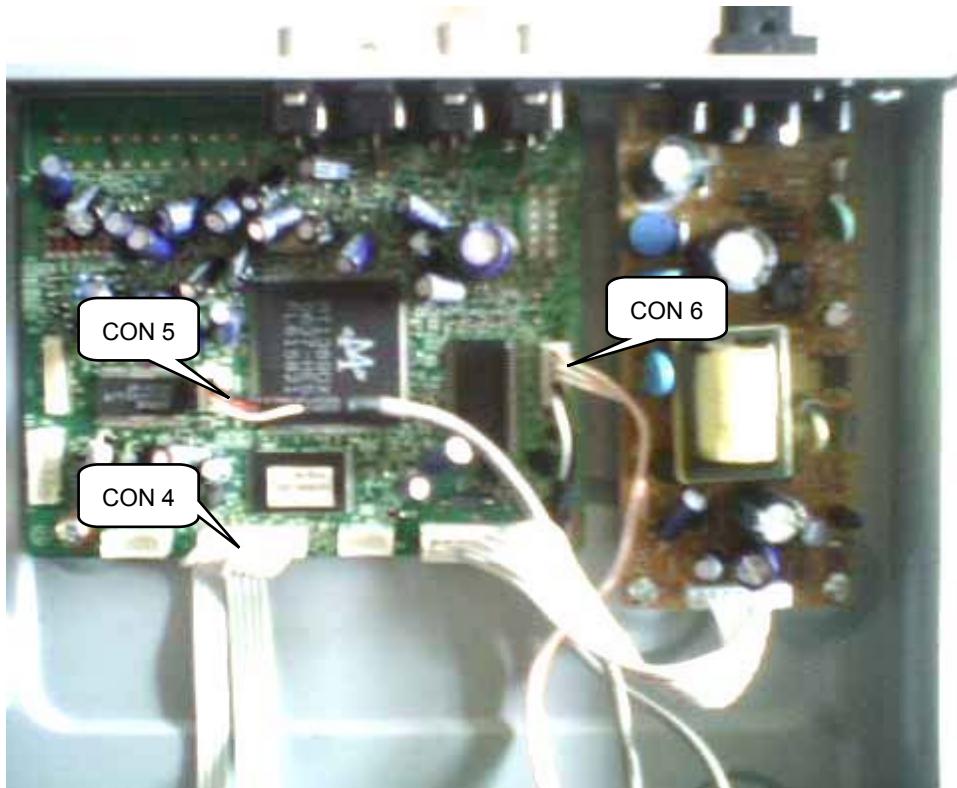


Figure 5

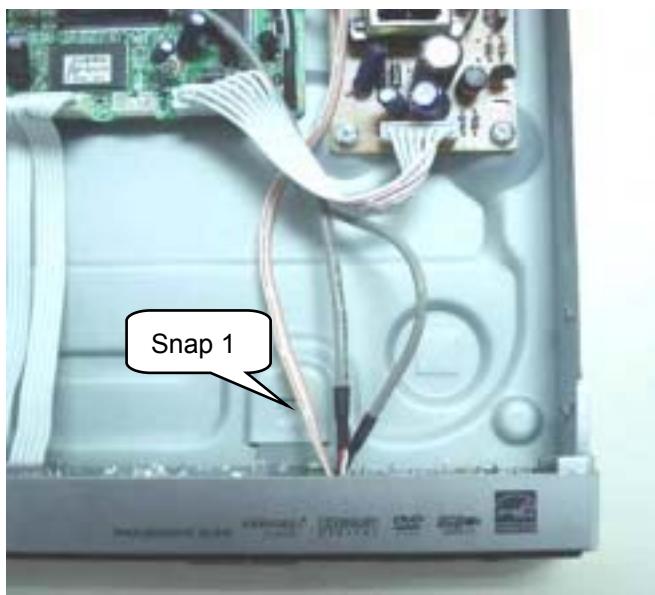


Figure 6



Figure 7

## Mechanical and Dismantling Instructions

### Dismantling Instruction

**Step6:** Dismantling Main Board, first disconnect the connector, and then remove 4 screws. (Figure 8)

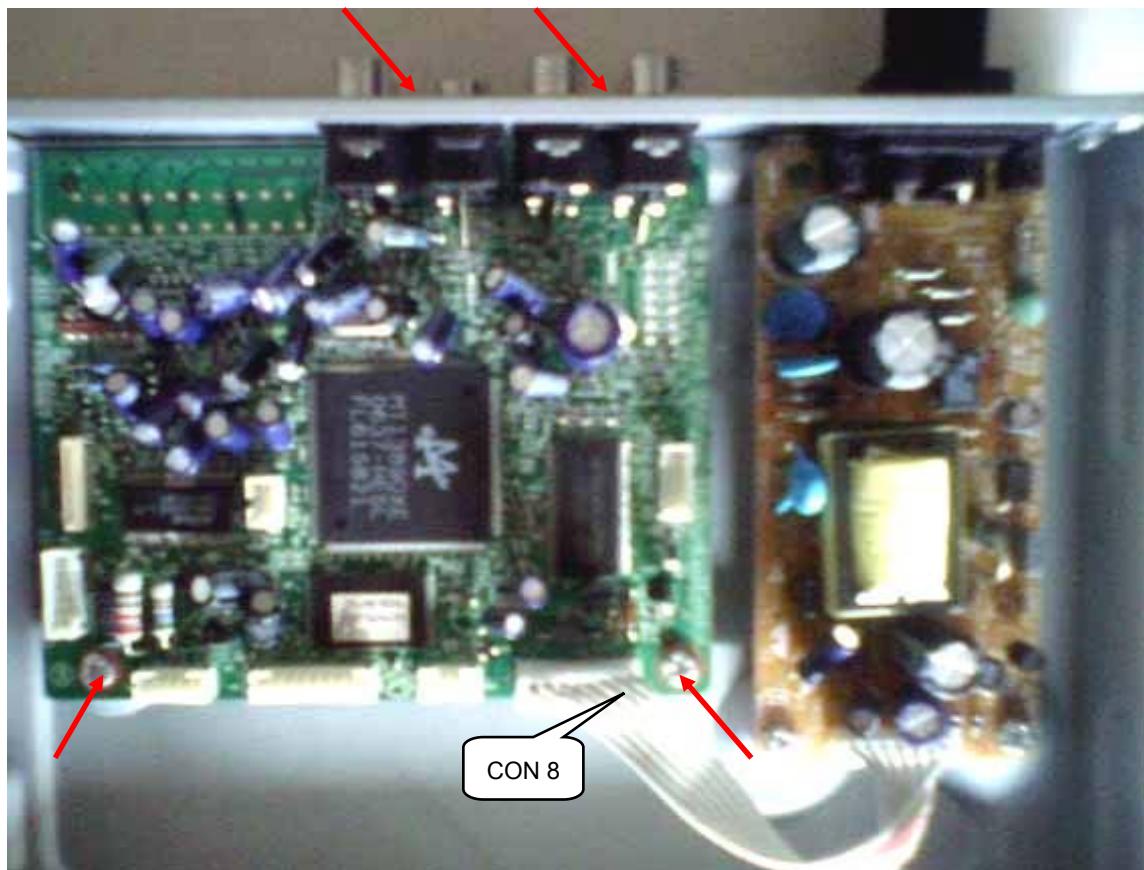


Figure 8

**Step7:** Remove the 2 screws on Power Board to dismantle the Power Board. (Figure 9)



Figure 9

## Software upgrade

### Preparation to upgrade software

- 1) Start the CD Burning software and create a new CD project (Data Disc) with the following setting:  
Label: DVP3XXX **(No need the label name)**  
File Name: **DVPXXXX\_XX.BIN**  
Power on the set and open the tray, then press <5><5> to check the File Name.

**Note: It is required capital letter for the File System name**

- 2) Burn the data onto a blank CDR

### B. Read out the software versions to confirm upgrading

- 1) Power on the set and press <Setup> button on the remote control.
- 2) Press <1><3><7><9>button to check the software information.

The software version and other information are display on the TV screen as follows:

Version	XX.XX.XX.XX (Main version)
SUB-VER	XX.XX.XX.XX (software version of application software)
8032	XX.XX.XX.XX
Servo	XX.XX.XX.XX (software version of Servo)
RISC	XX.XX.XX.XX
DSP	XX.XX.XX.XX
Region Code	X

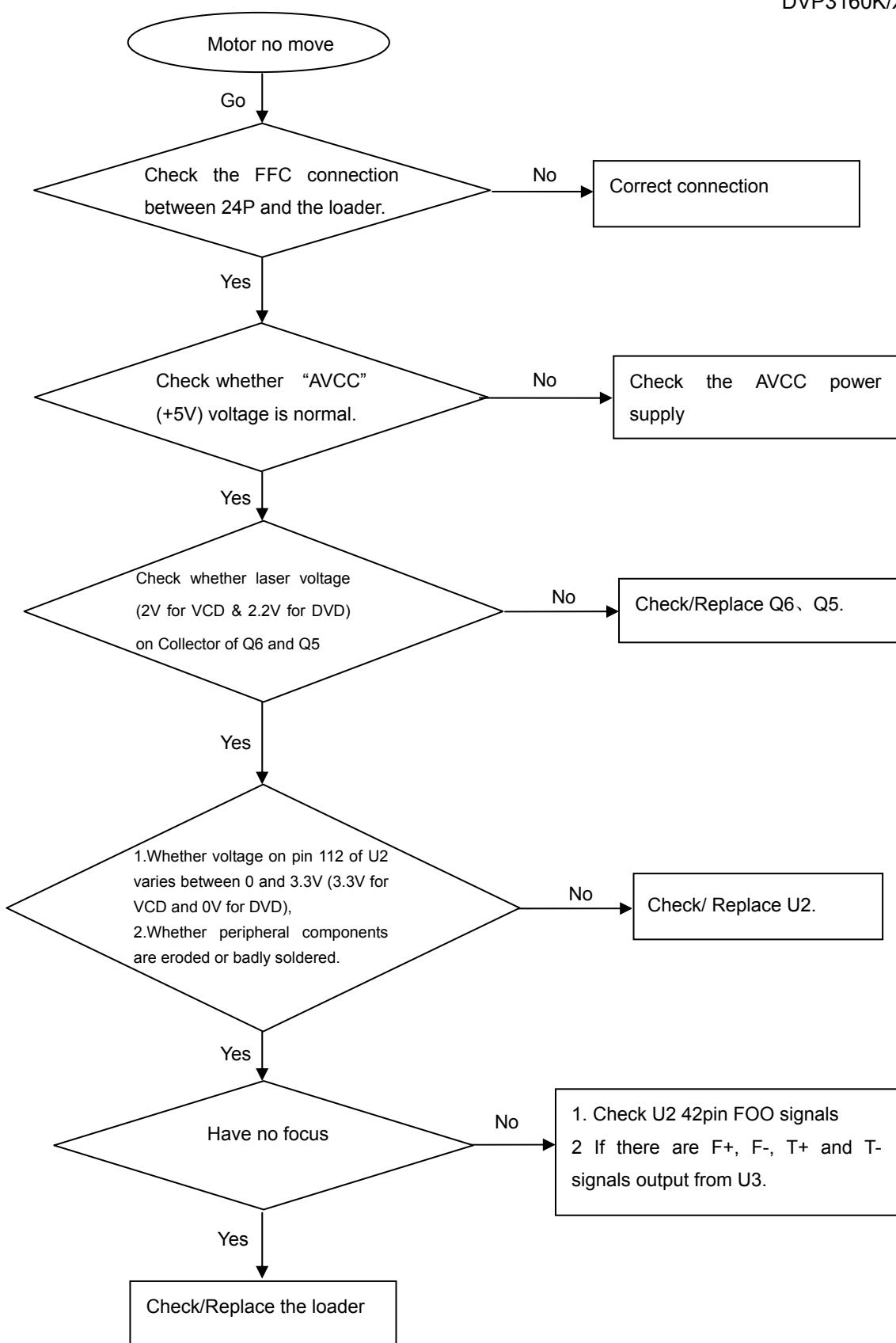
### A. Procedure for software upgrade:

- 1) Power on the set and insert the prepared Upgrade CDR.
- 2) The set will starts reading disc & response with the following display TV screen:  
Upgrade File DETECTED  
Upgrade?  
Press Play TO START.
- 3) Press <OK> button to confirm, then screen will display :  
Files coping...  
UPGRADING...
- 4) The upgraded disc will automatically out when files coping complete, then take out the disc.
- 5) About 1 minute later, the trace will automatically close when upgrading complete.

**Caution:** The set must not be power off during upgrading, Otherwise the Main Board will be damaged entirely.

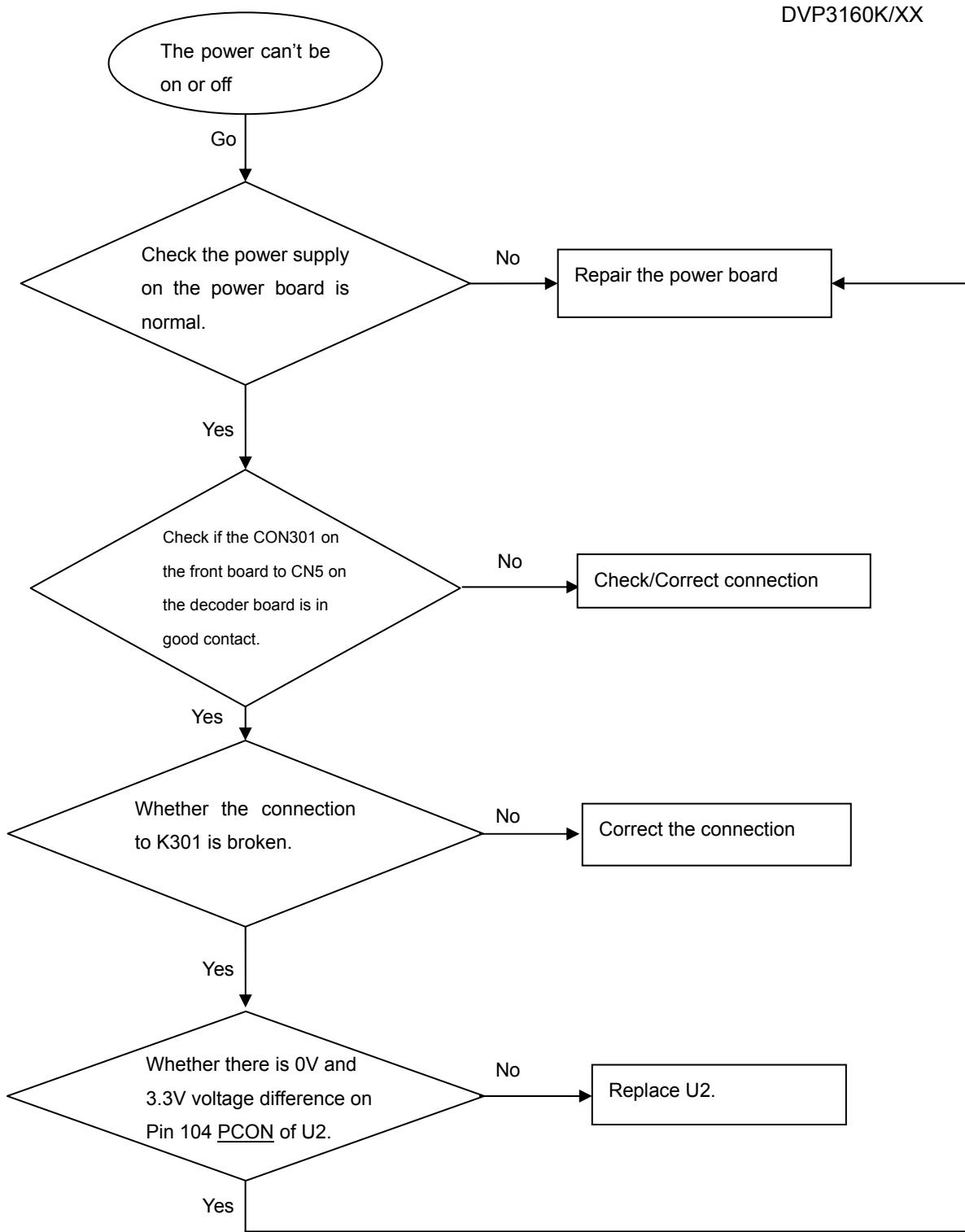
**Spindle motor does not move**

Remark: Trouble shooting chart for  
DVP3160K/XX



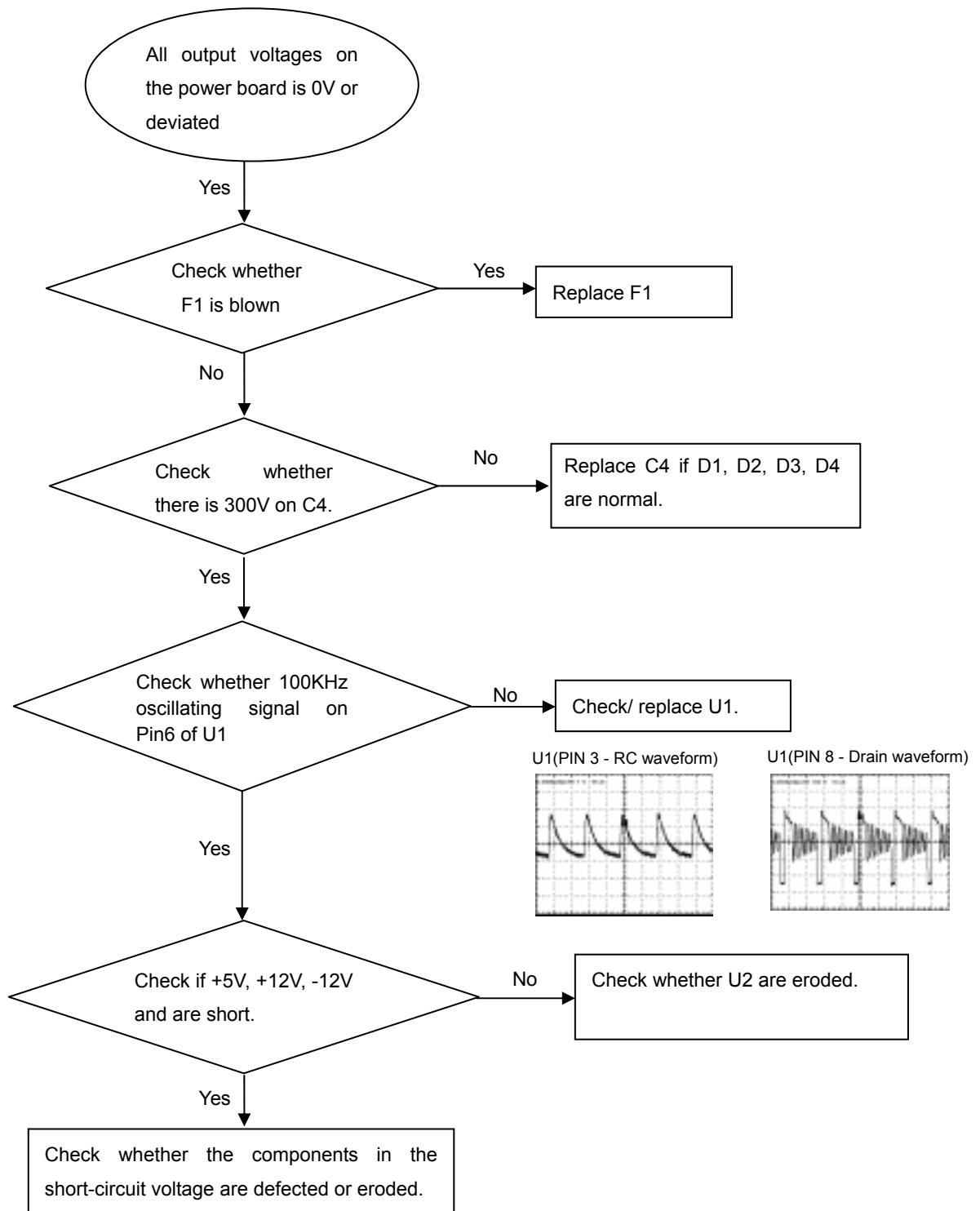
**The power can not be on or off**

Remark: Trouble shooting chart for  
DVP3160K/XX



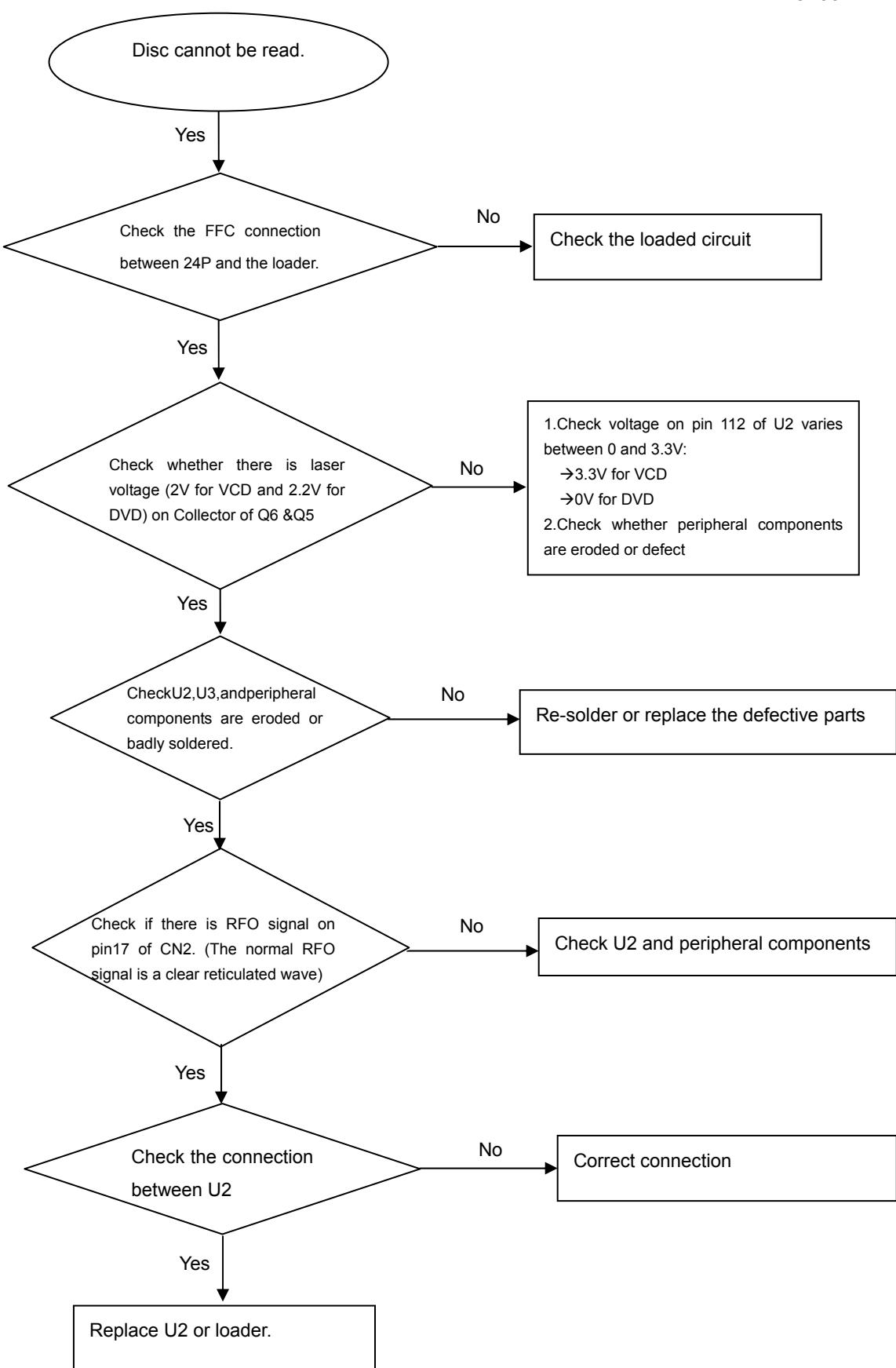
**All output voltages on the power board is 0V or deviated.**

Remark: Trouble shooting chart for  
DVP3160K/XX



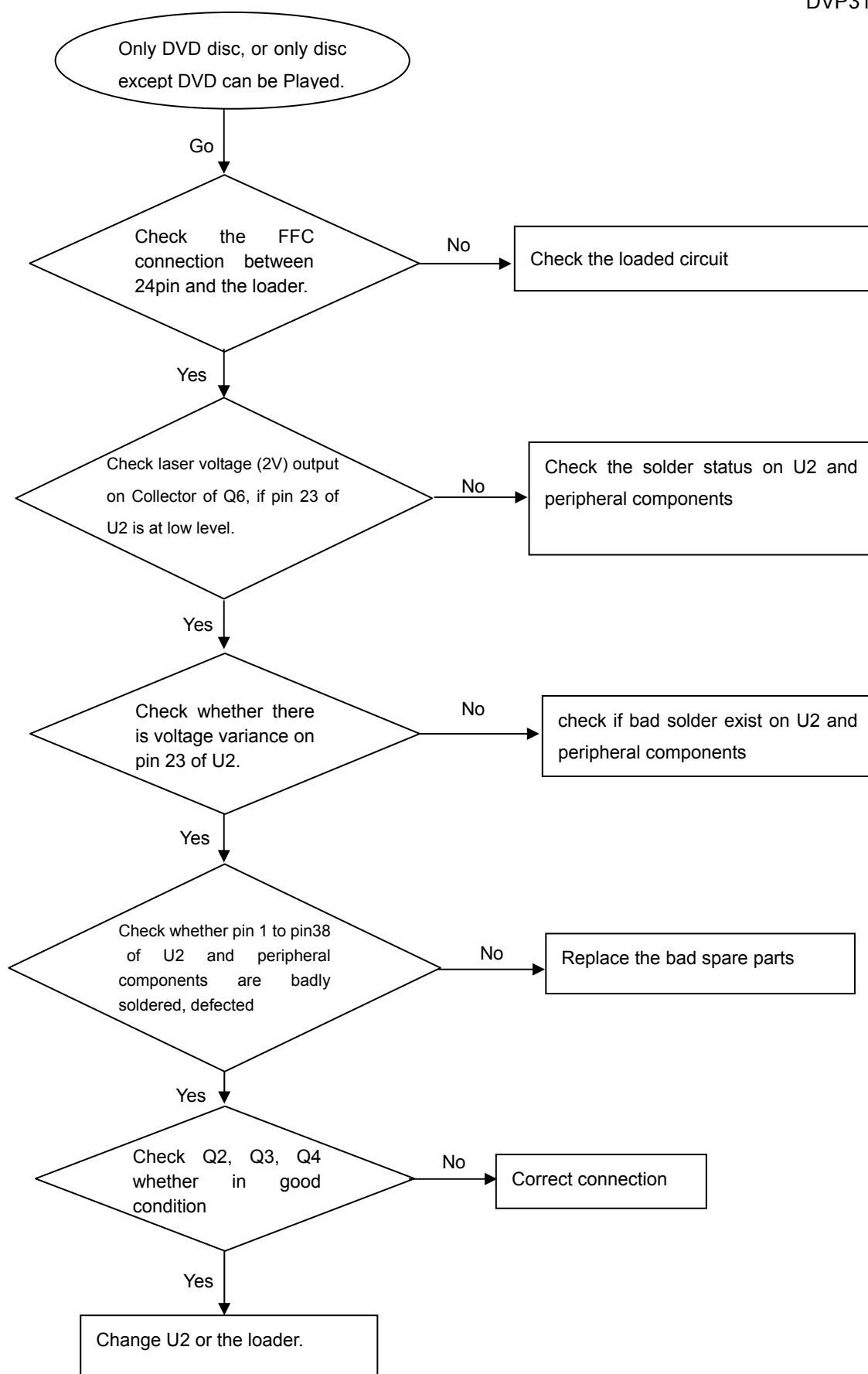
**Disc cannot be read.**

Remark: Trouble shooting chart for  
DVP3160K/XX



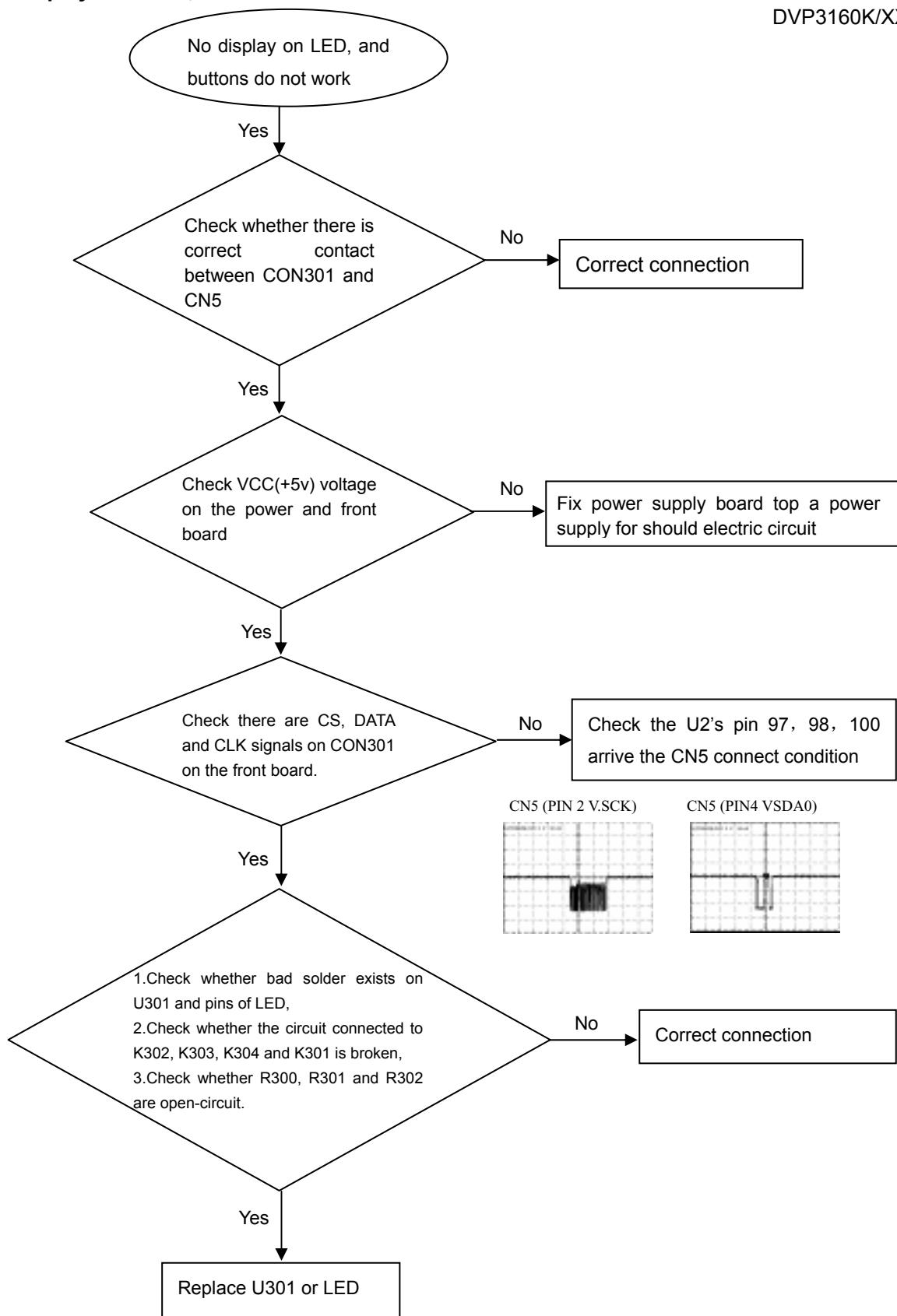
**Only DVD disc or only disc except DVD can be played**

Remark: Trouble shooting chart for  
DVP3160K/XX



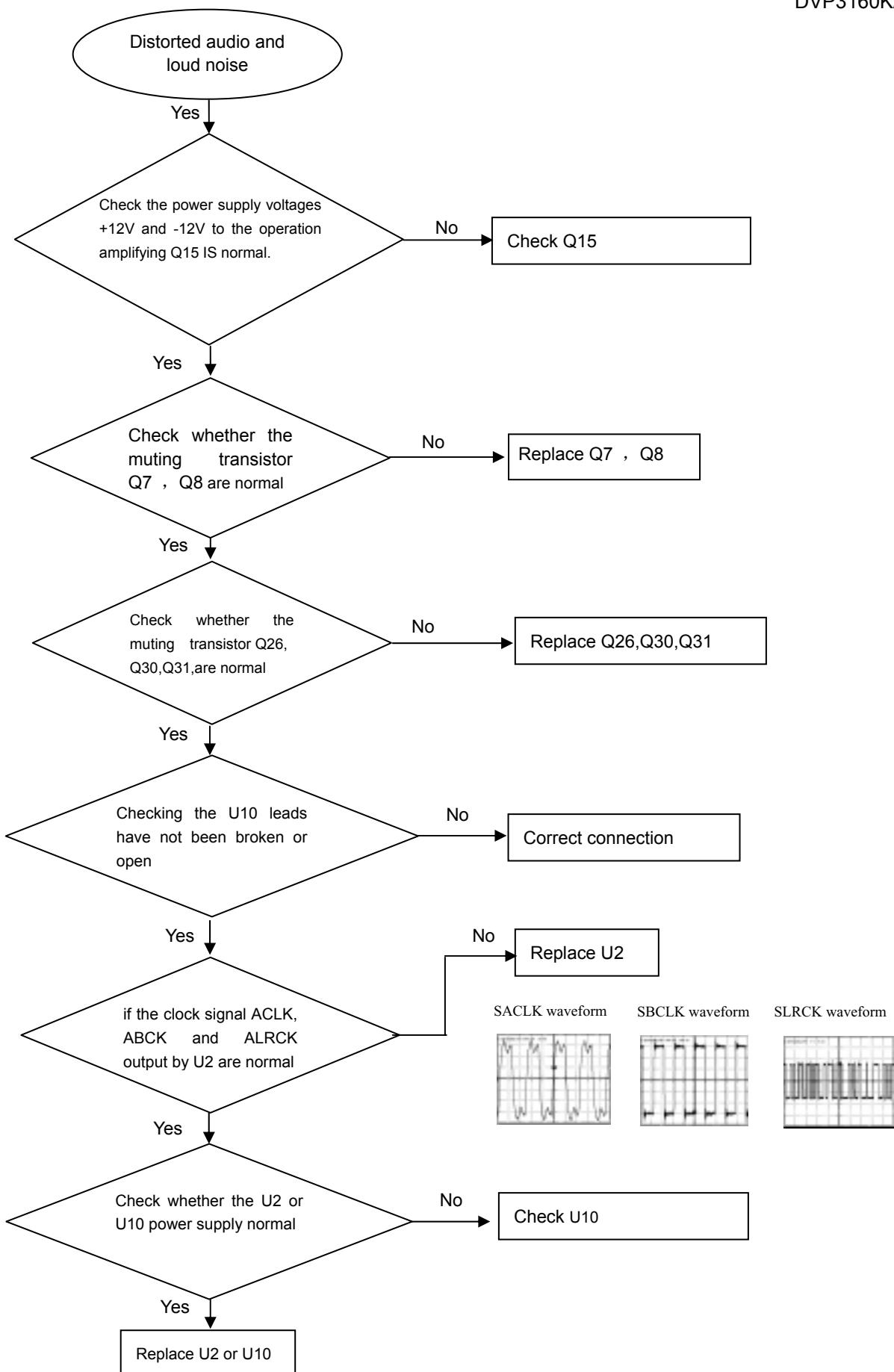
**No display on LEDD, and buttons do not work**

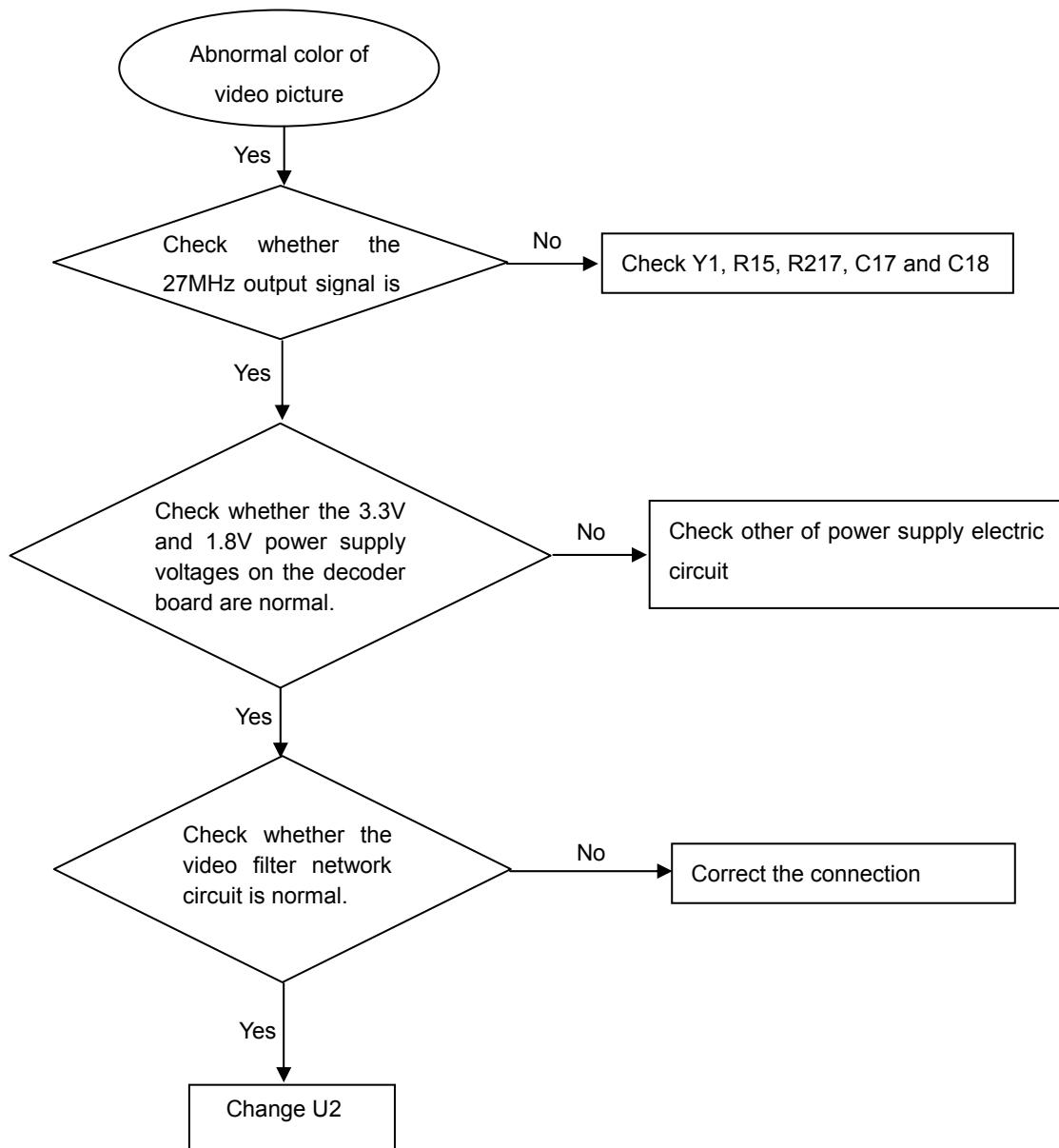
Remark: Trouble shooting chart for  
DVP3160K/XX



**Distorted audio and loud noise**

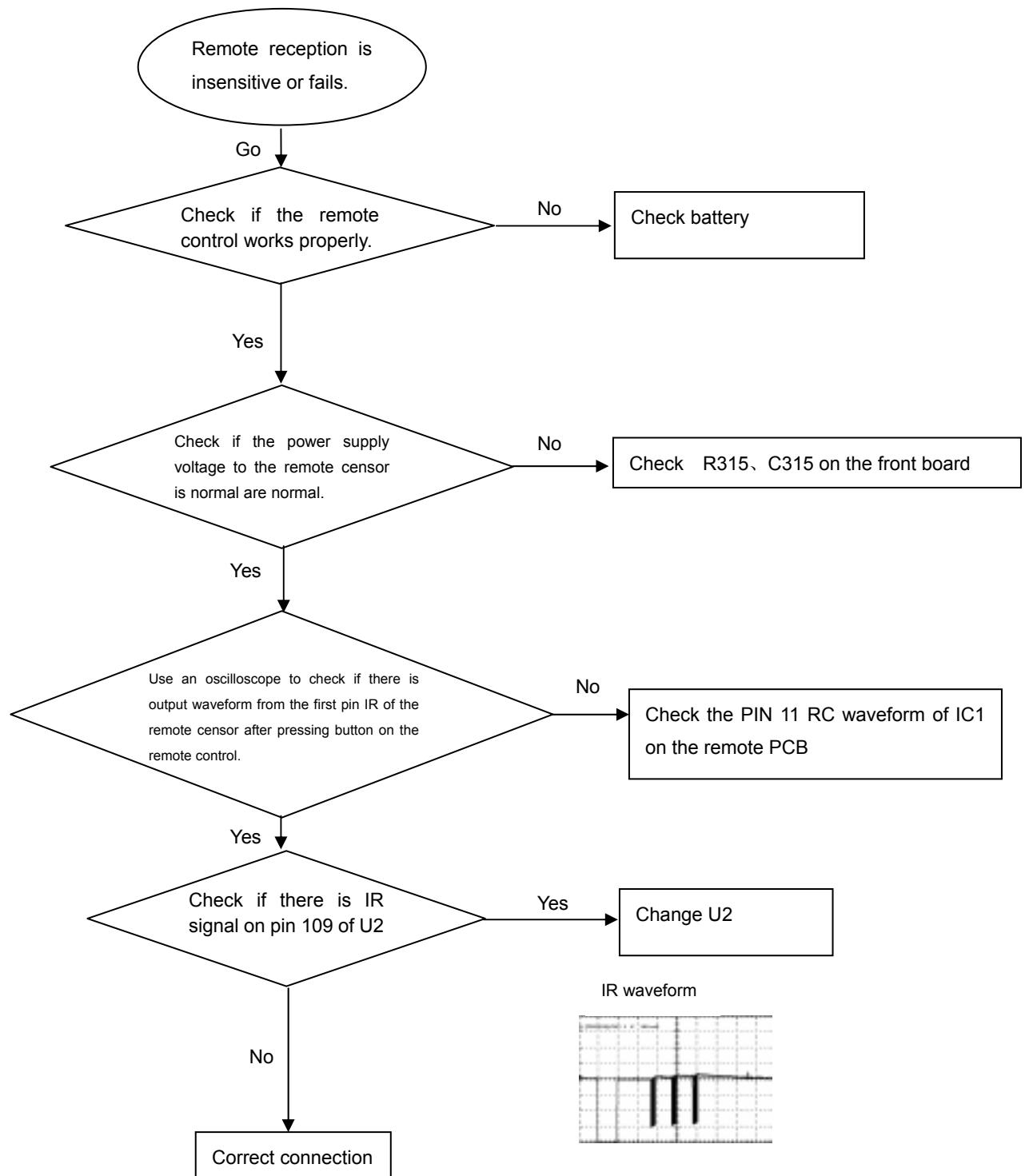
Remark: Trouble shooting chart for  
DVP3160K/XX



**Abnormal color of video picture**Remark: Trouble shooting chart for  
DVP3160K/XX

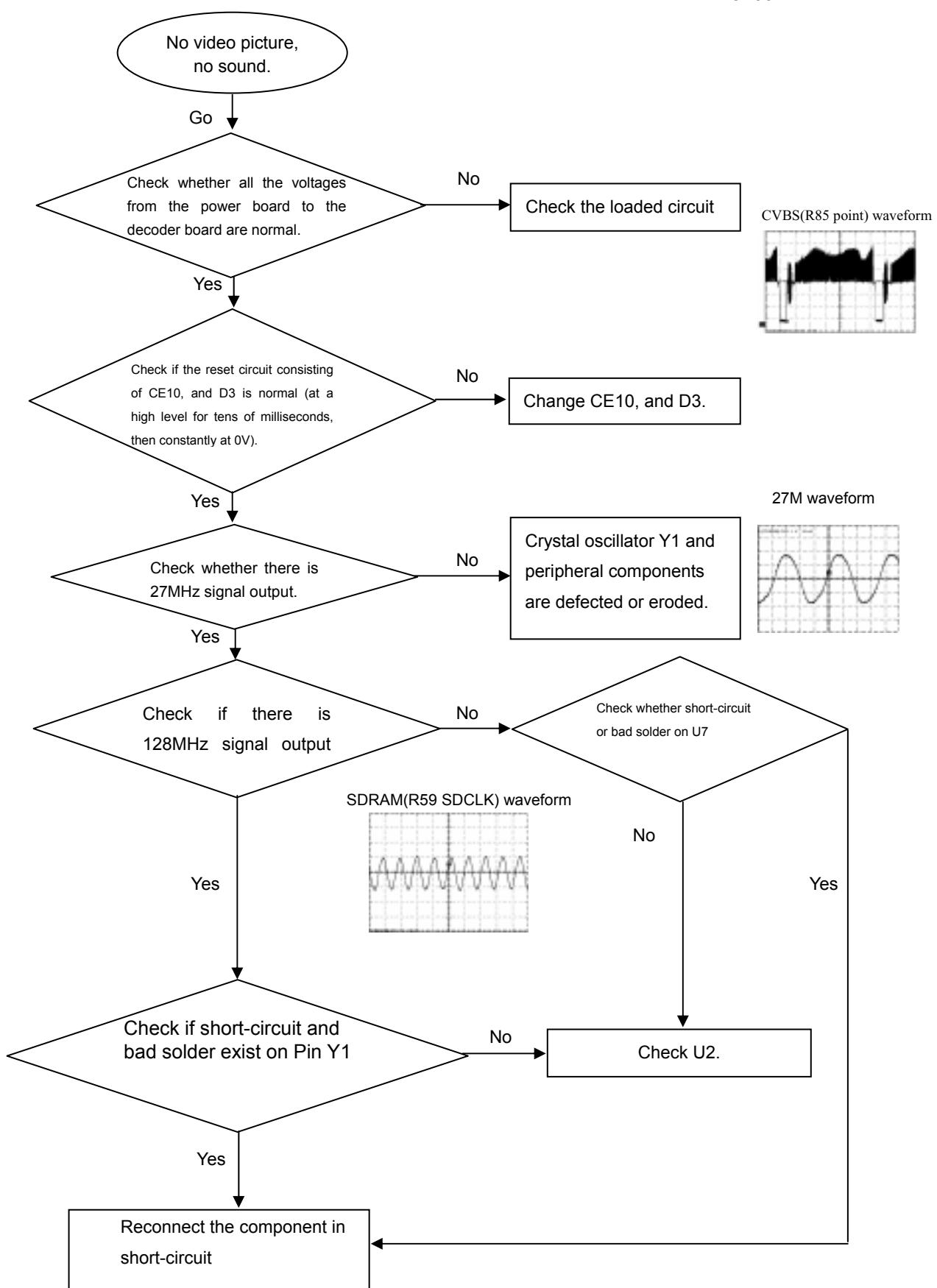
---

**Remote reception is insensitive or fails.**

 Remark: Trouble shooting chart for  
DVP3160K/XX


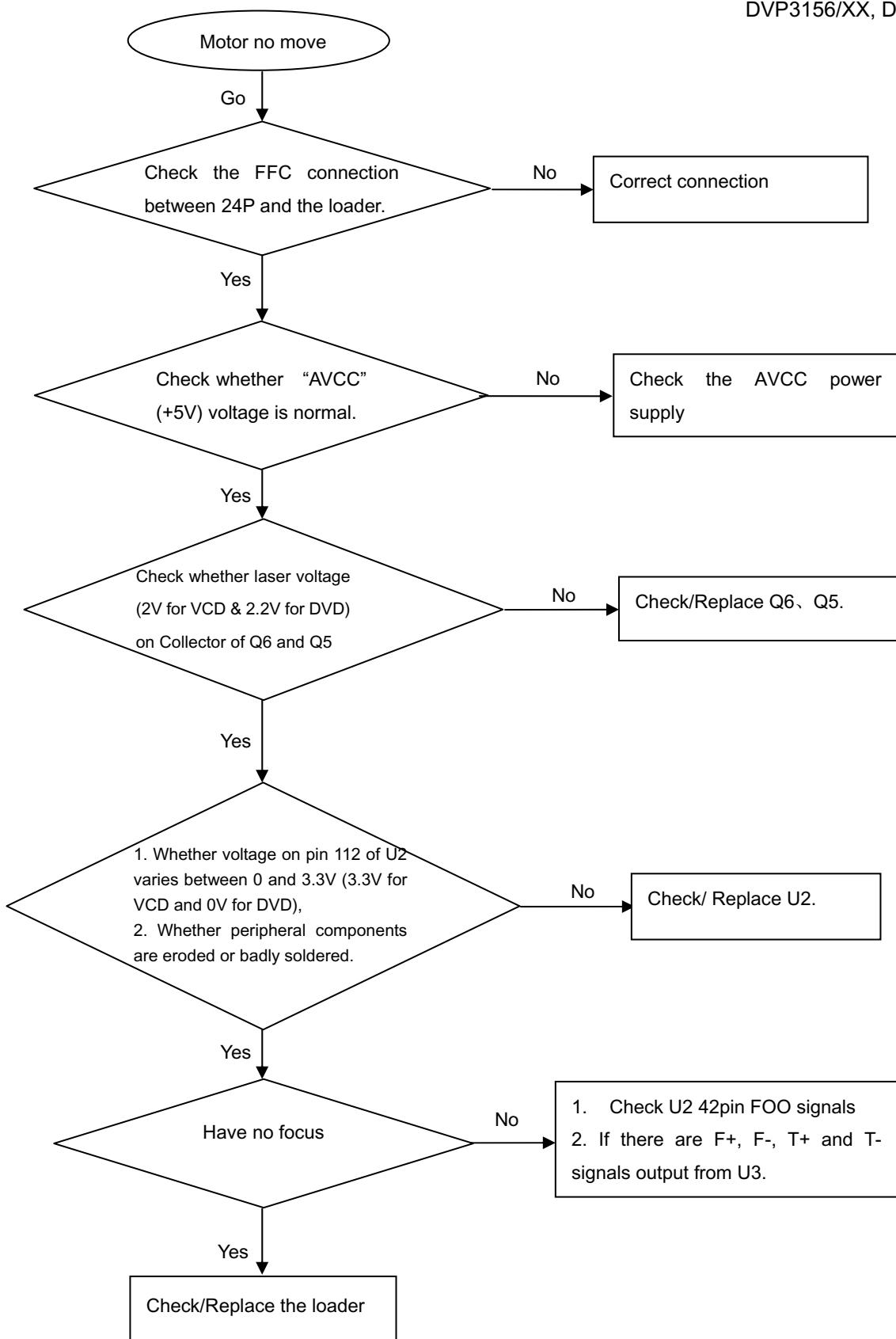
**No video picture, no sound.**

Remark: Trouble shooting chart for  
DVP3160K/XX



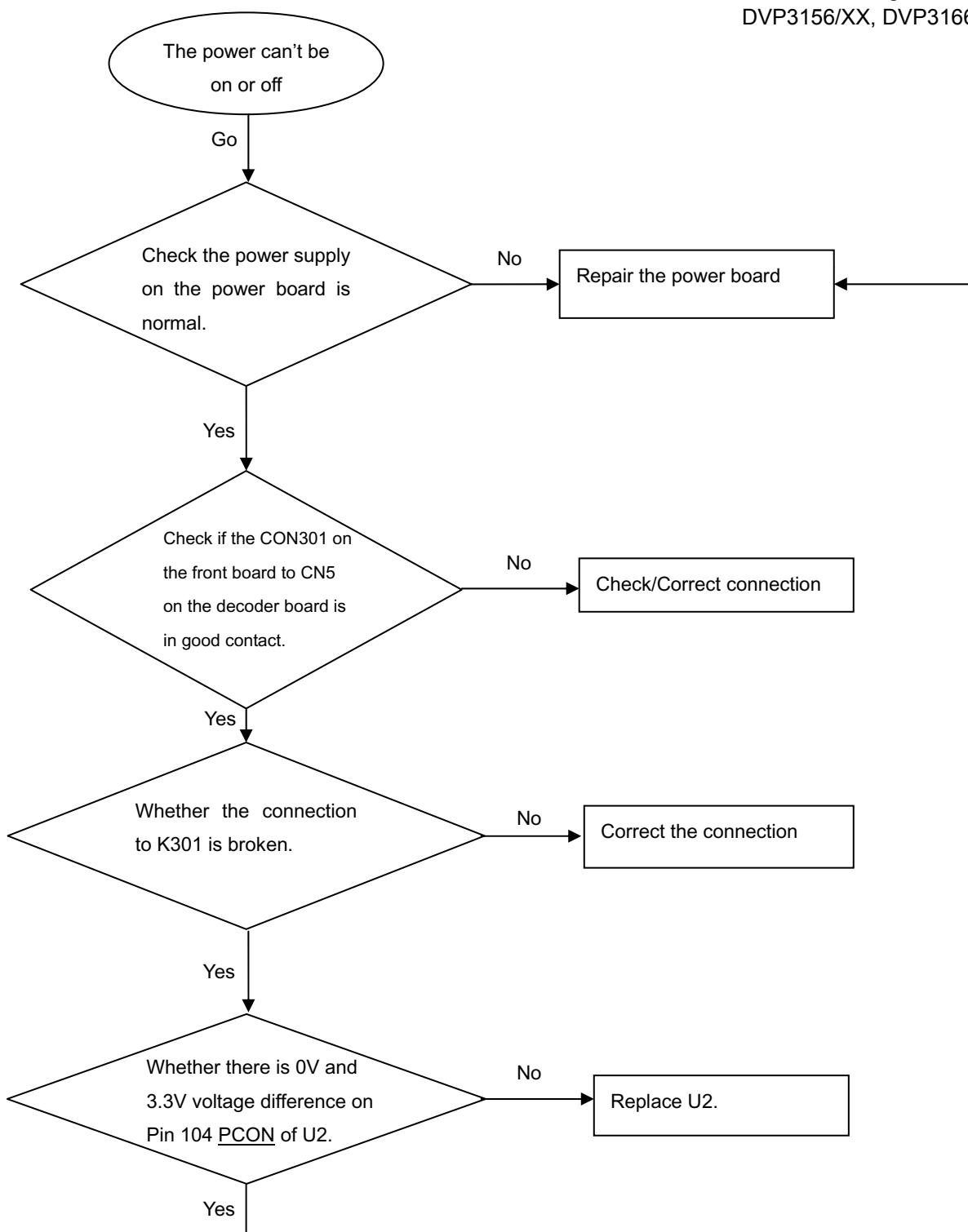
**Spindle motor does not move**

Remark: Trouble shooting chart for  
DVP3156/XX, DVP3166(K)/XX



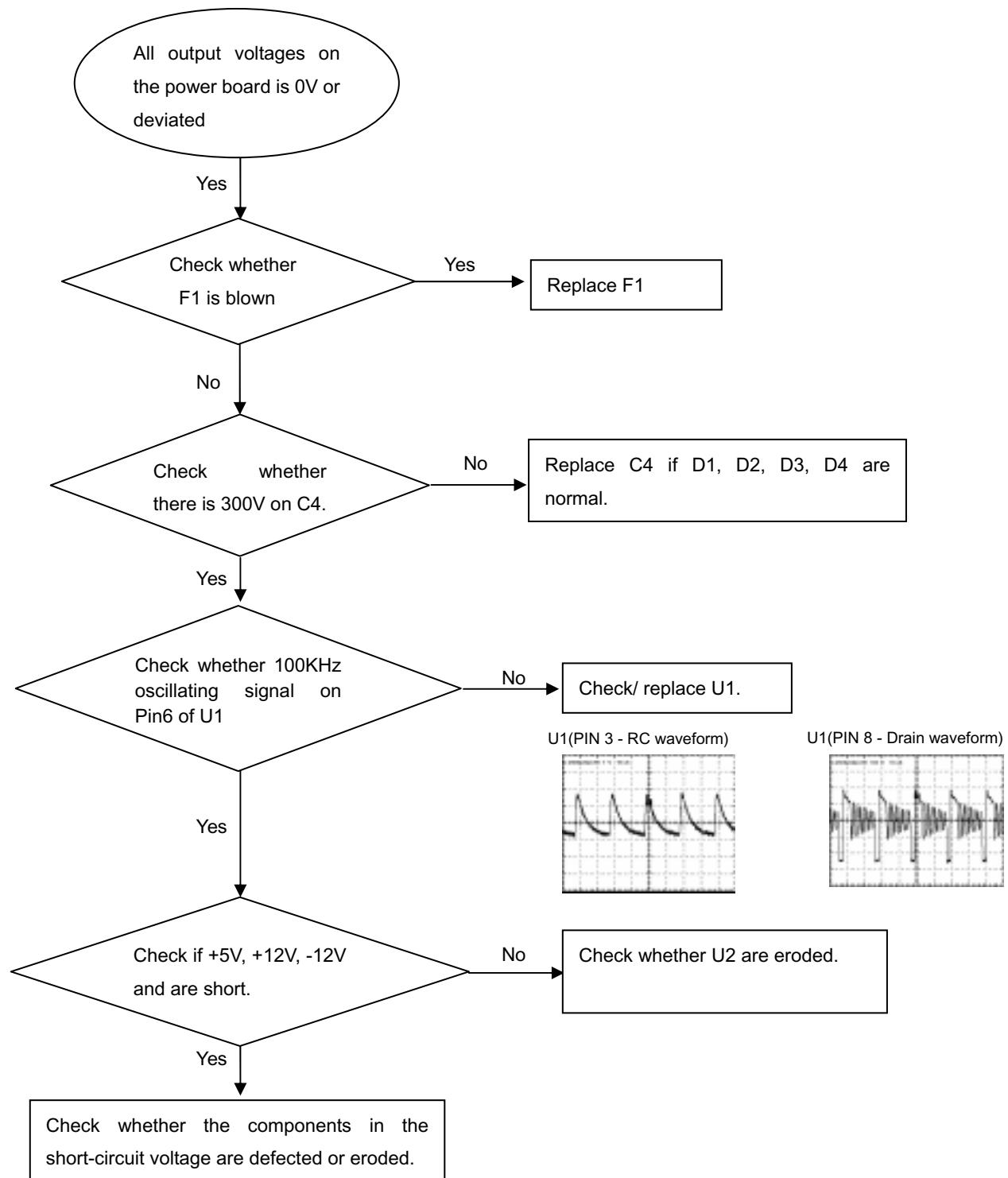
**The power can not be on or off**

Remark: Trouble shooting chart for  
DVP3156/XX, DVP3166(K)/XX



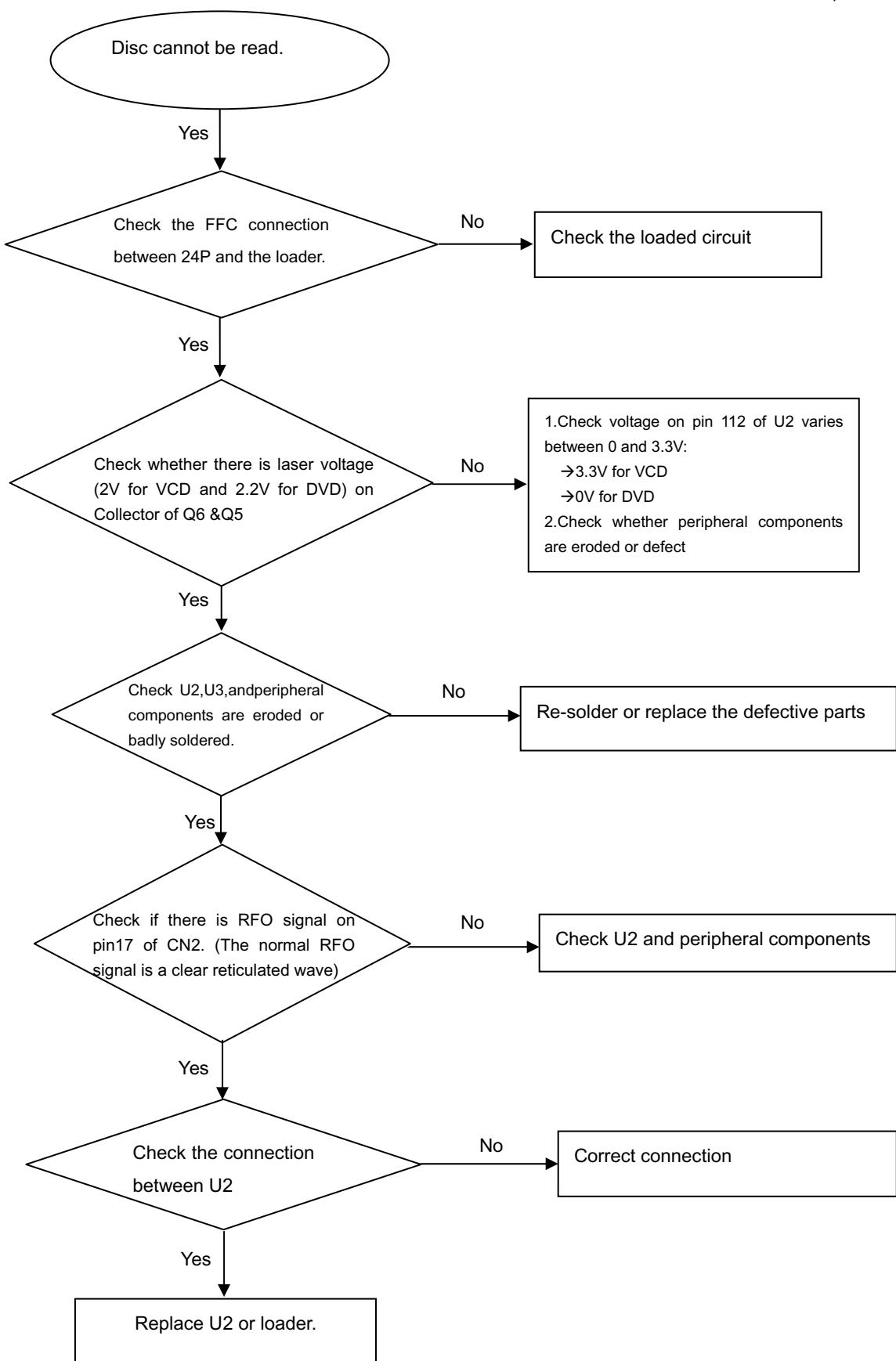
**All output voltages on the power board is 0V or deviated.**

Remark: Trouble shooting chart for  
DVP3156/XX, DVP3166(K)/XX



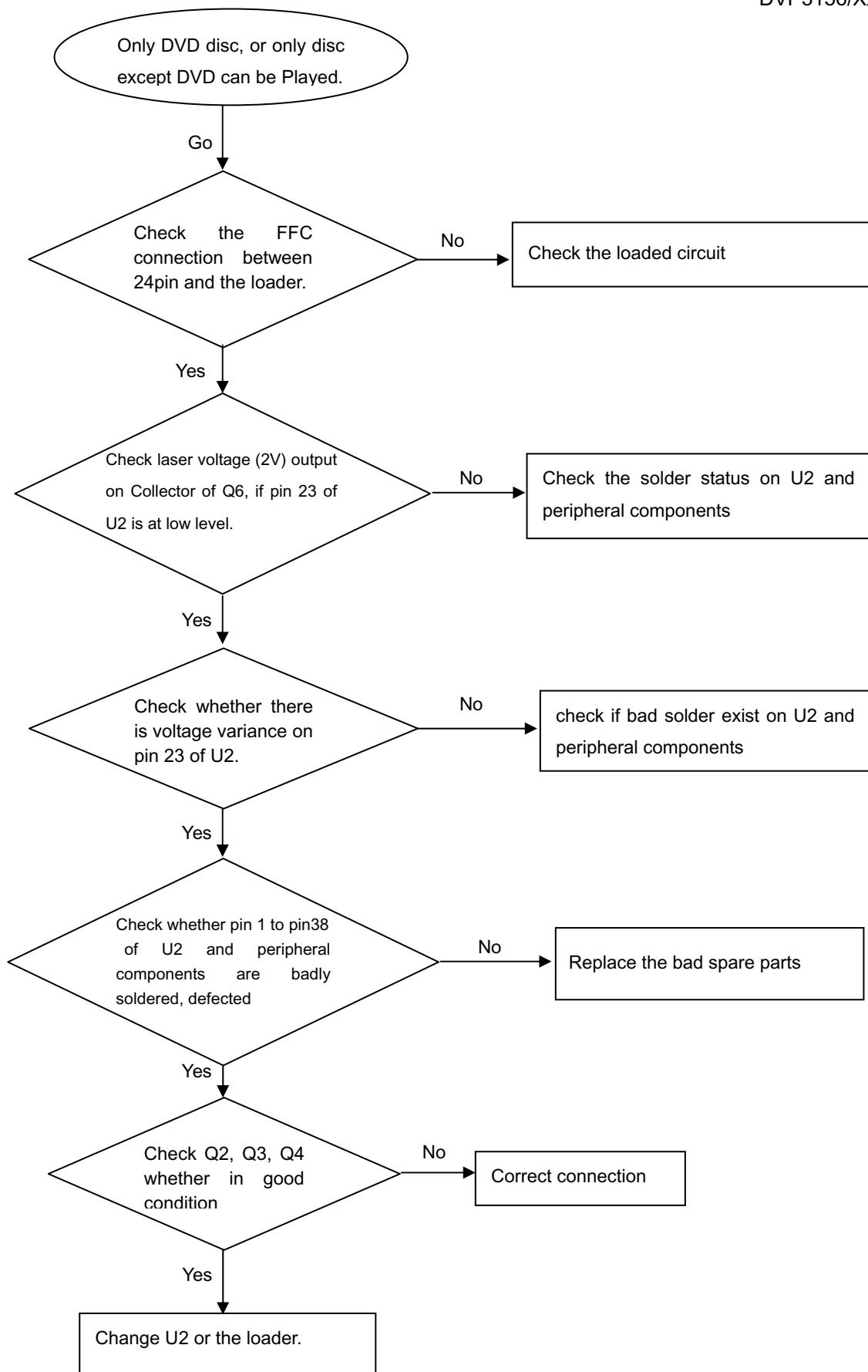
**Disc cannot be read.**

Remark: Trouble shooting chart for  
DVP3156/XX, DVP3166(K)/XX



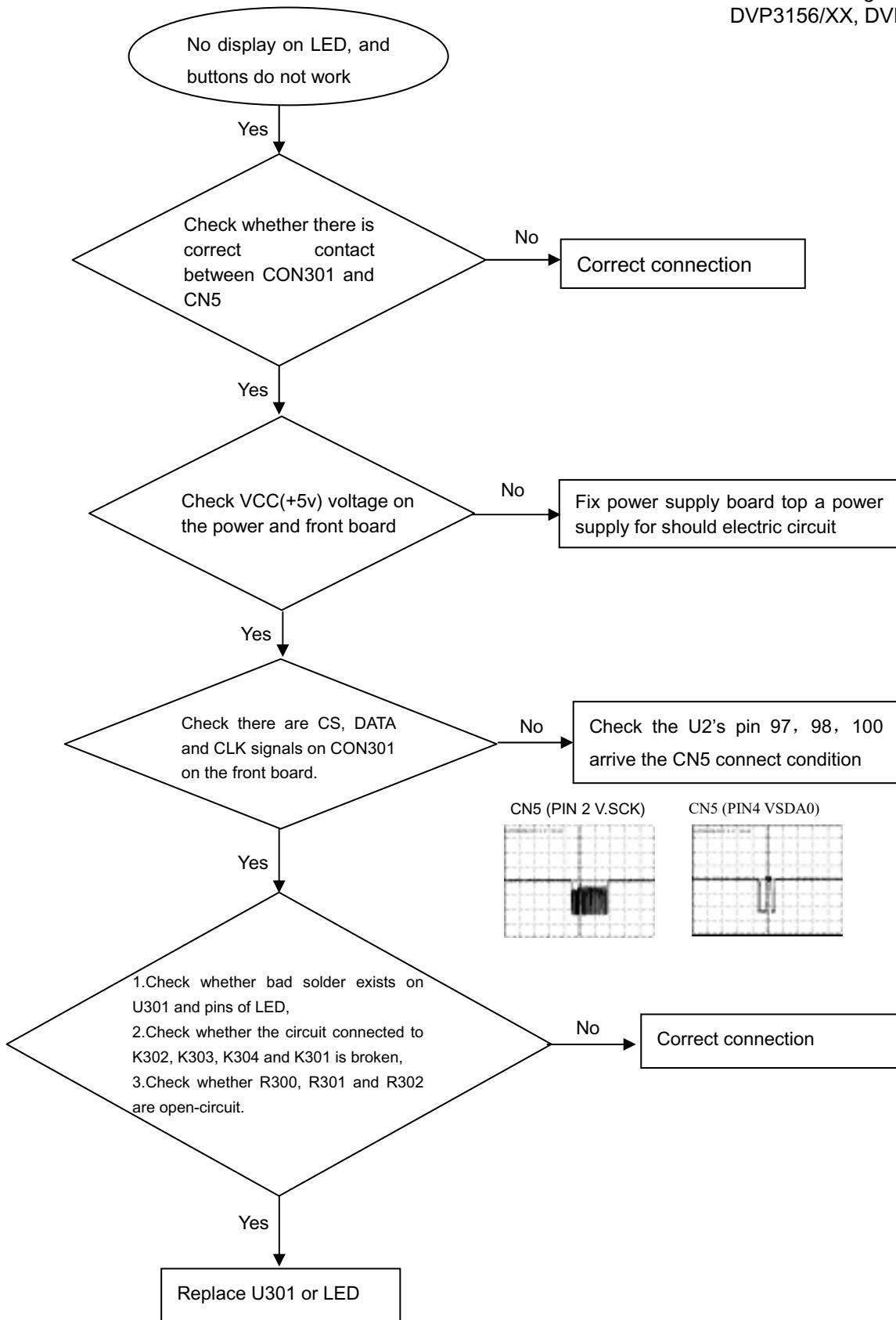
**Only DVD disc or only disc except DVD can be played**

Remark: Trouble shooting chart for  
DVP3156/XX, DVP3166(K)/XX



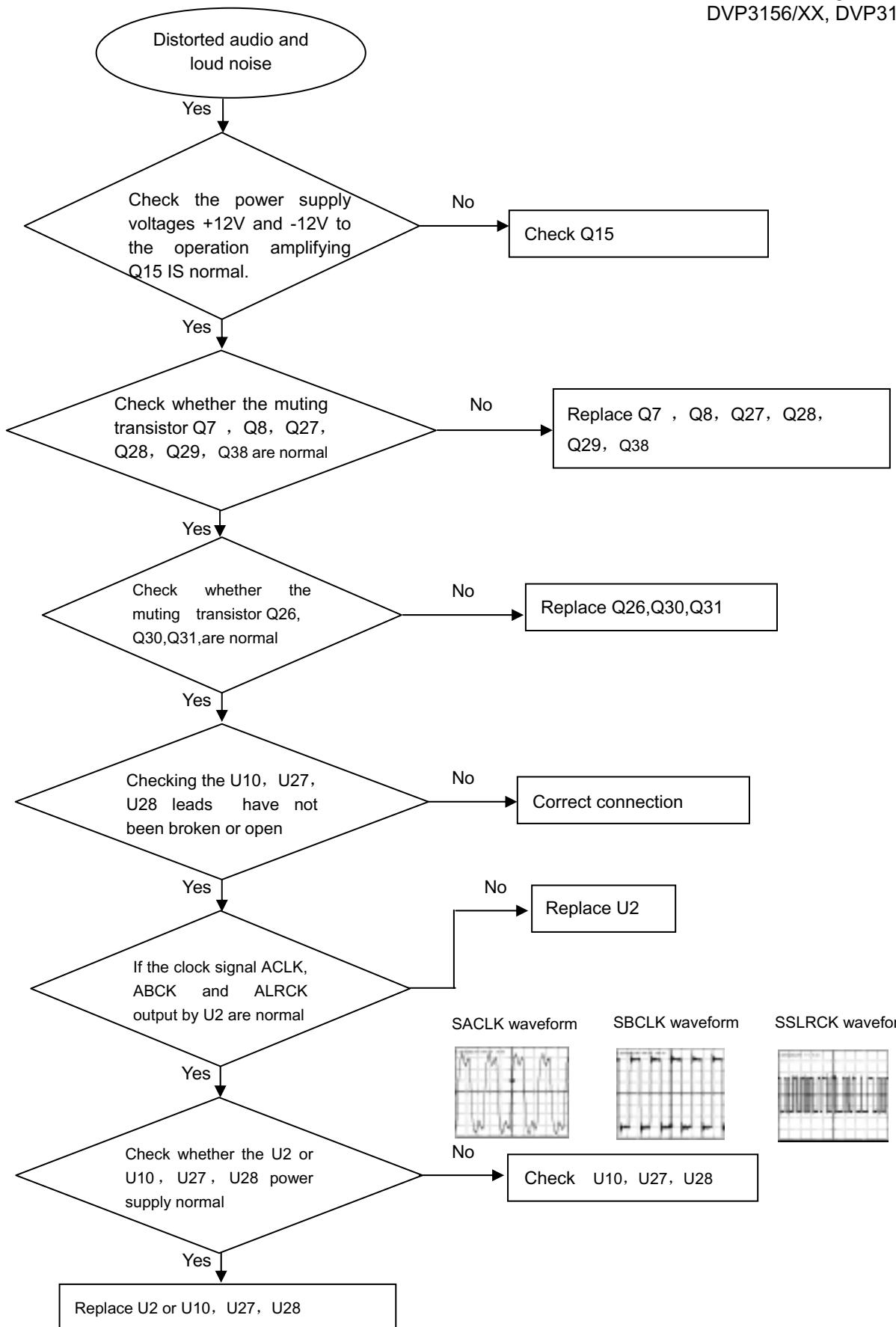
**No display on LEDD, and buttons do not work**

Remark: Trouble shooting chart for  
DVP3156/XX, DVP3166(K)/XX



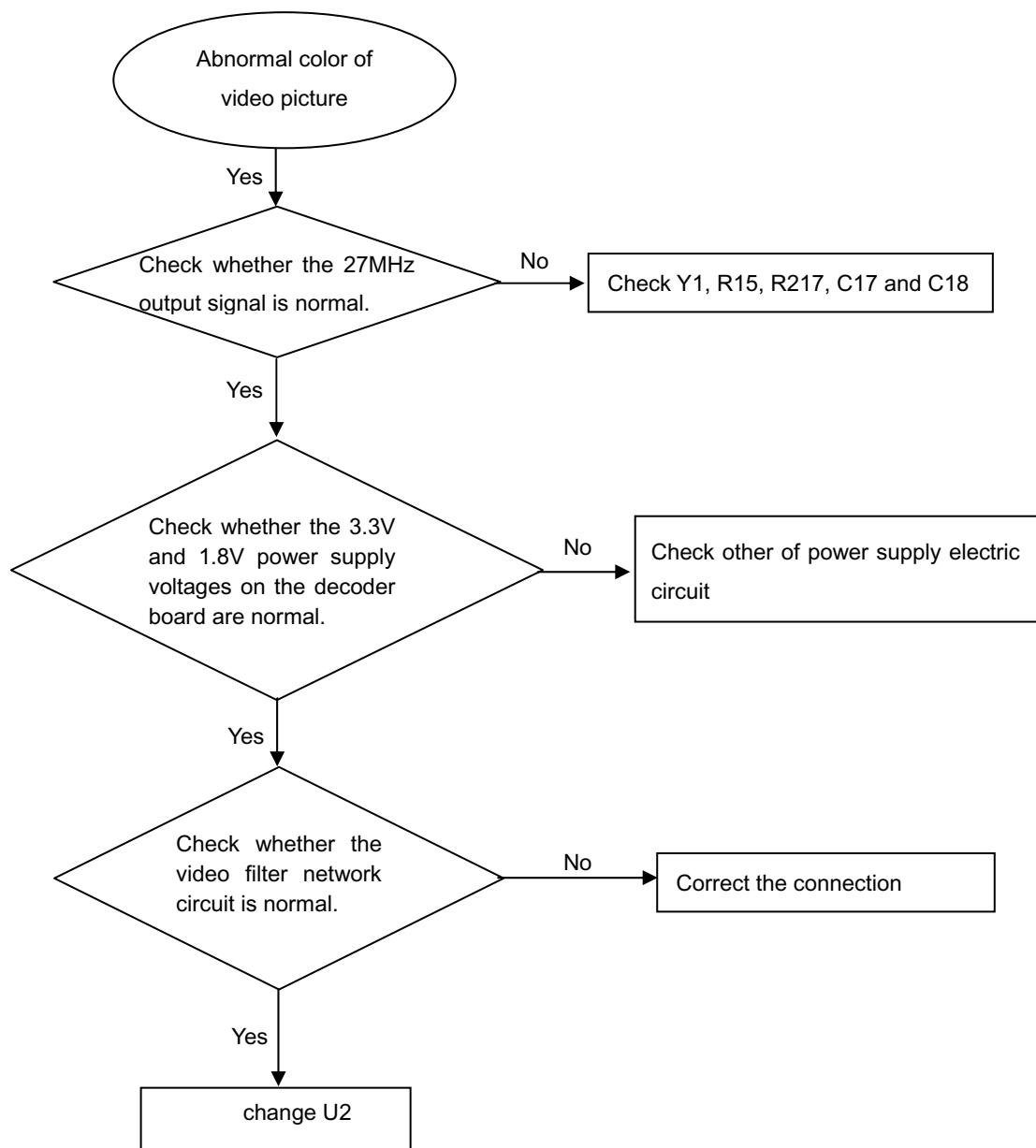
**Distorted audio and loud noise**

Remark: Trouble shooting chart for  
DVP3156/XX, DVP3166(K)/XX



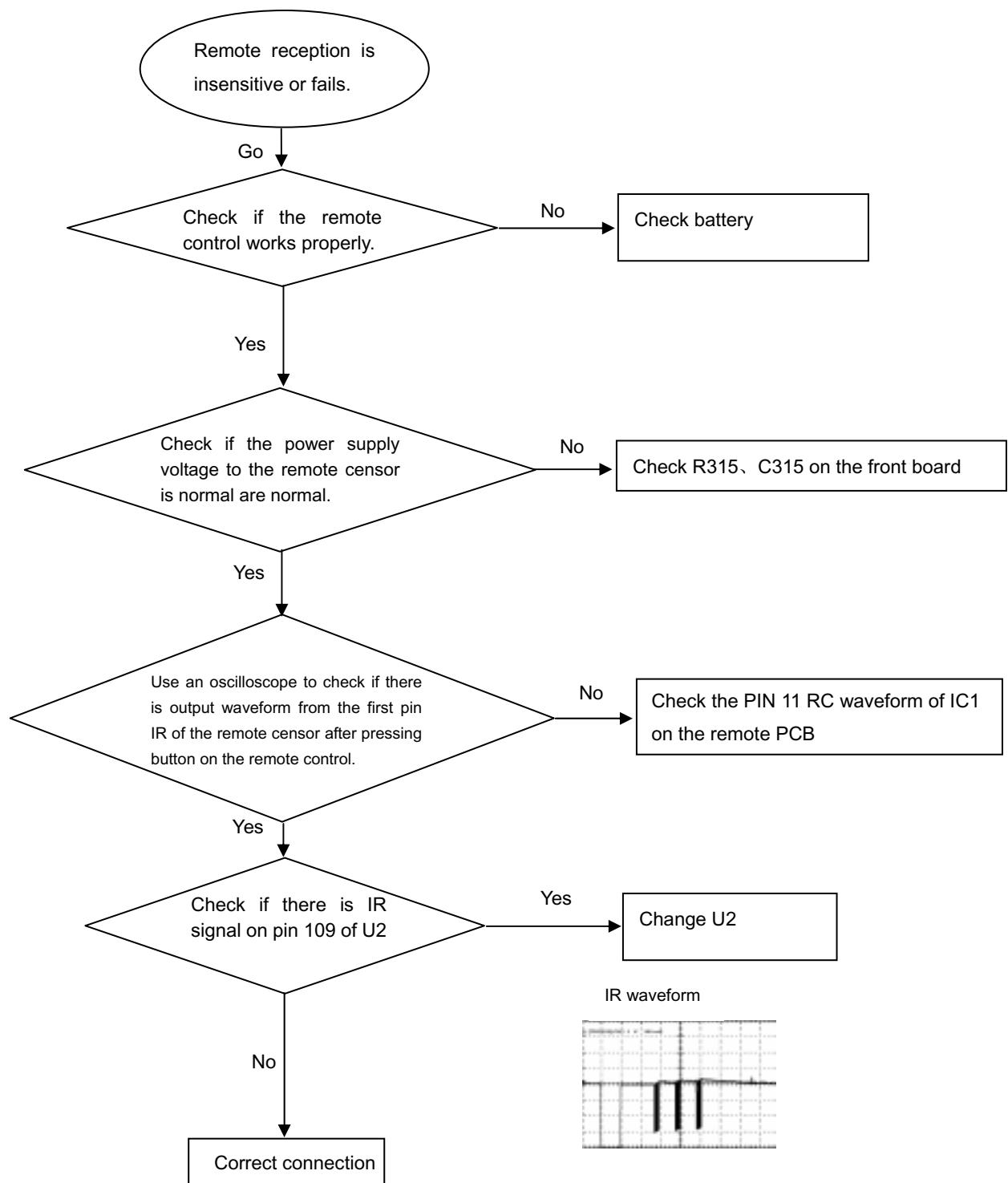
**Abnormal color of video picture**

Remark: Trouble shooting chart for  
DVP3156/XX, DVP3166(K)/XX



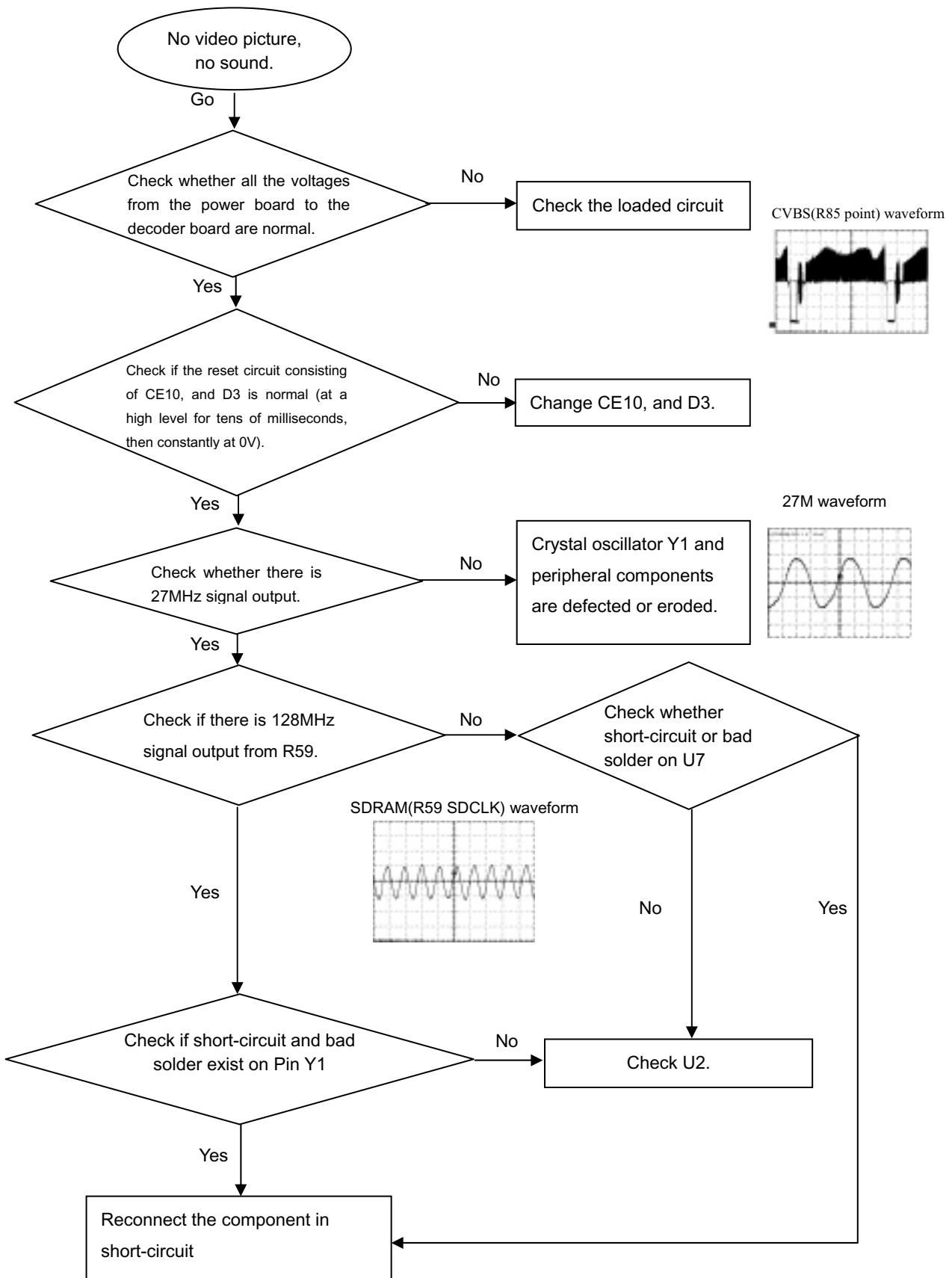
**Remote reception is insensitive or fails.**

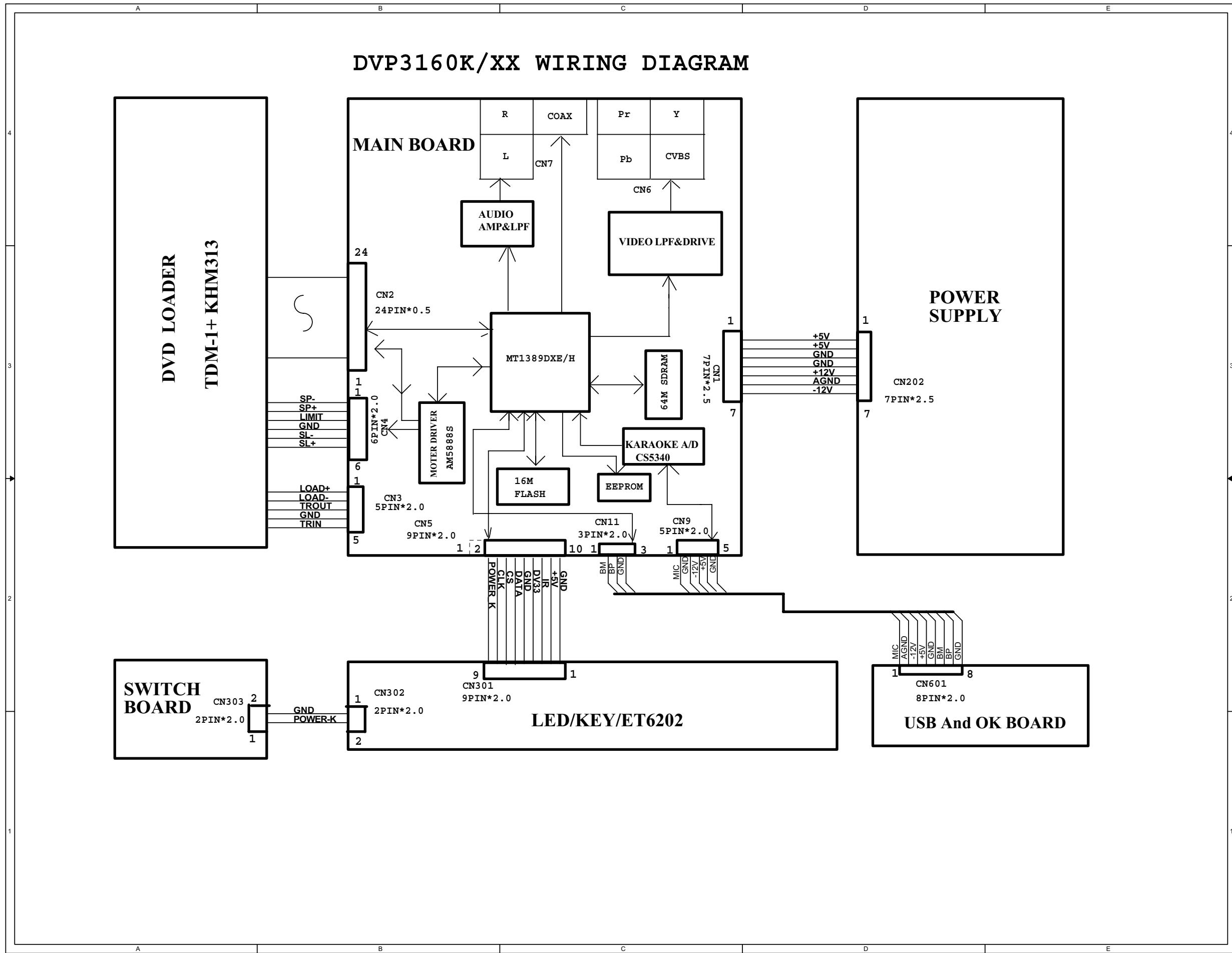
Remark: Trouble shooting chart for  
DVP3156/XX, DVP3166(K)/XX

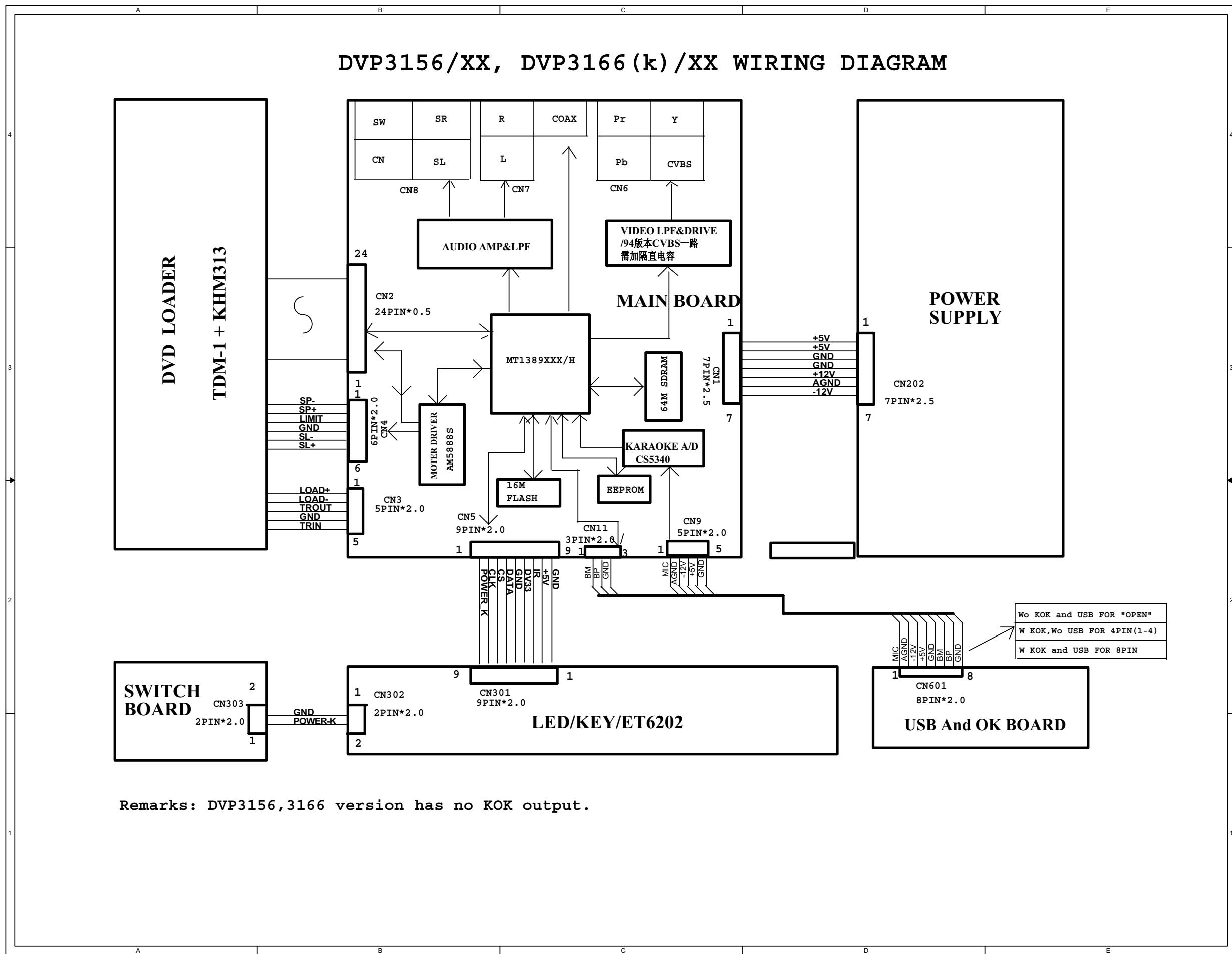


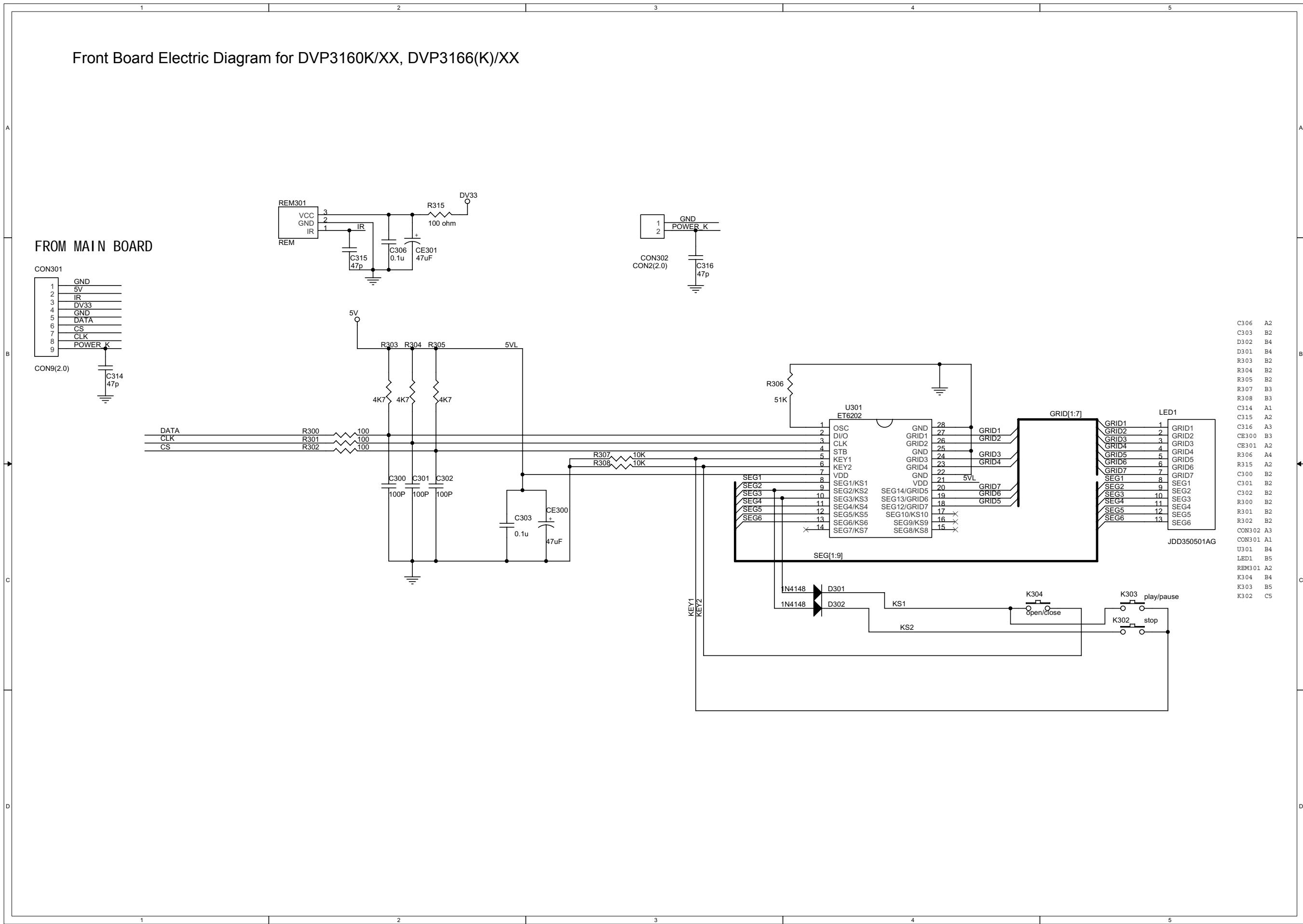
**No video picture, no sound.**

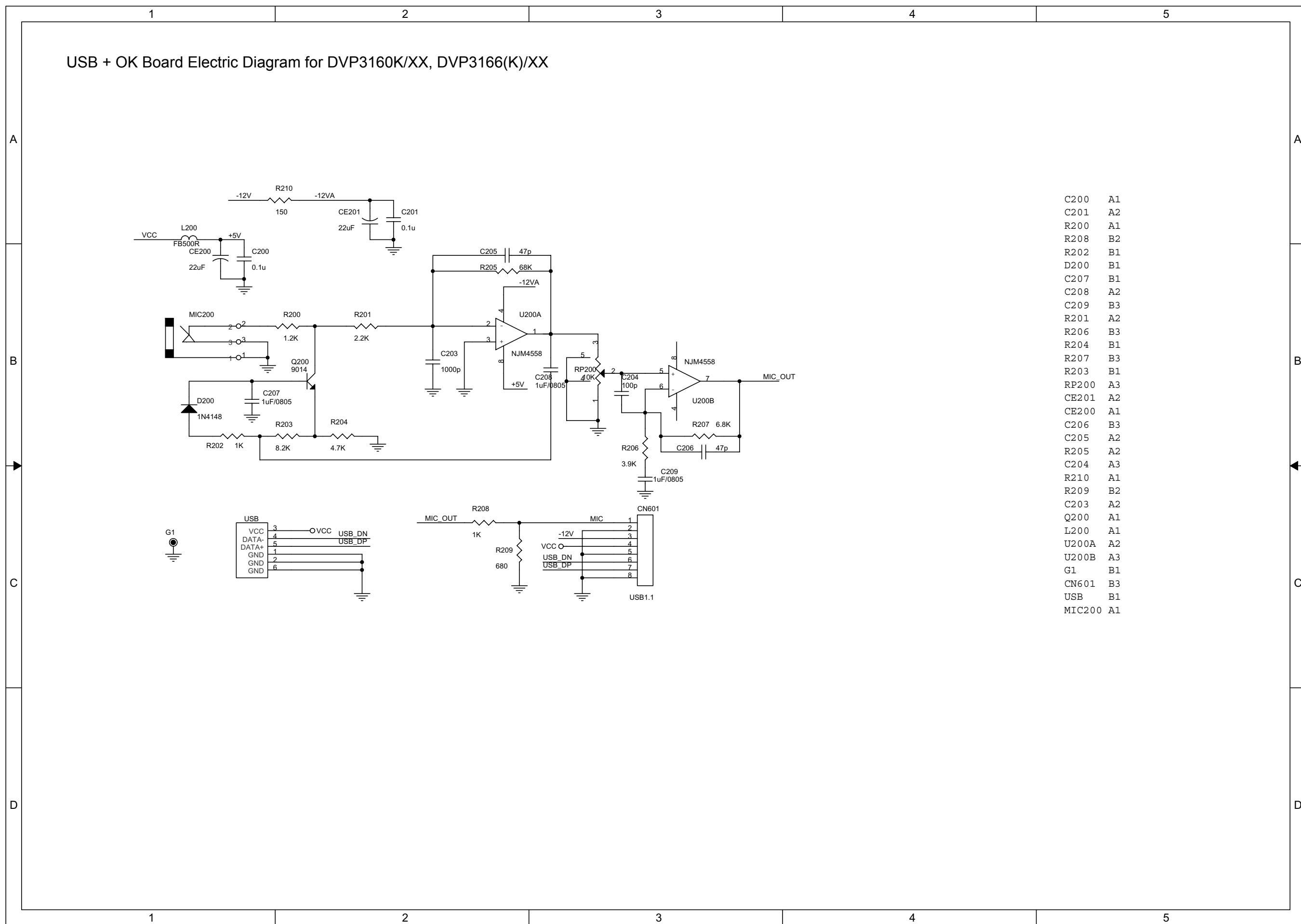
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DVP3156/XX, DVP3166(K)/XX



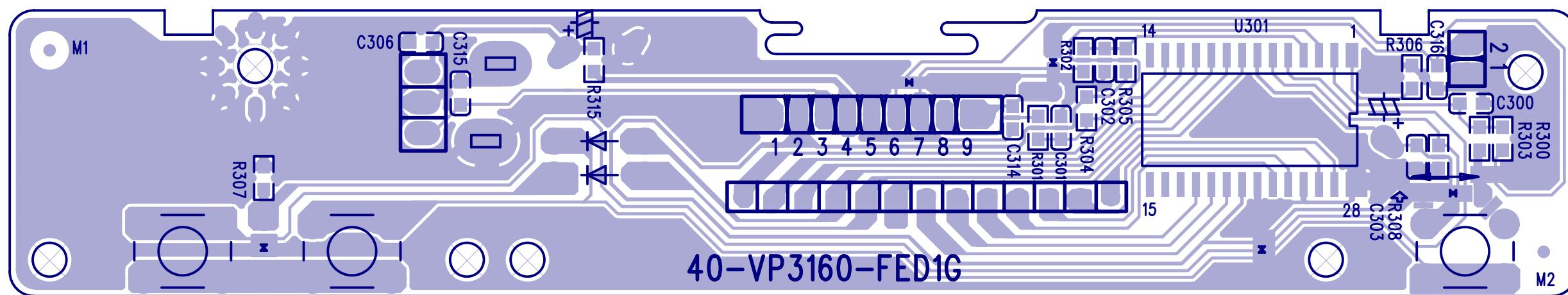




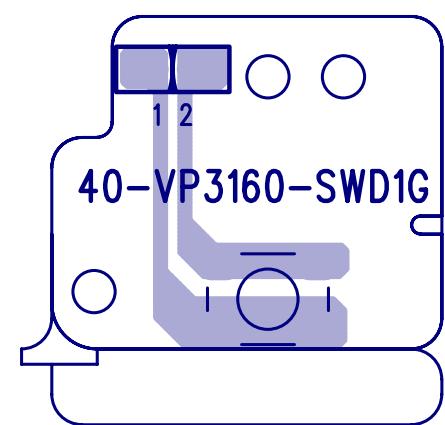




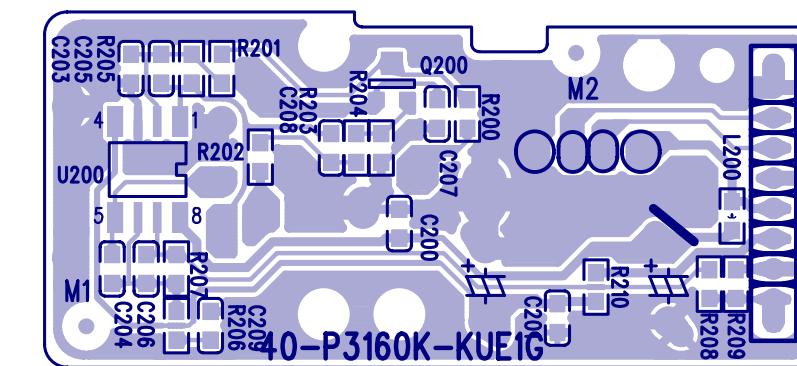
Front Board Print-Layout (Bottom Side) for DVP3160K/XX, DVP3166(K)/XX

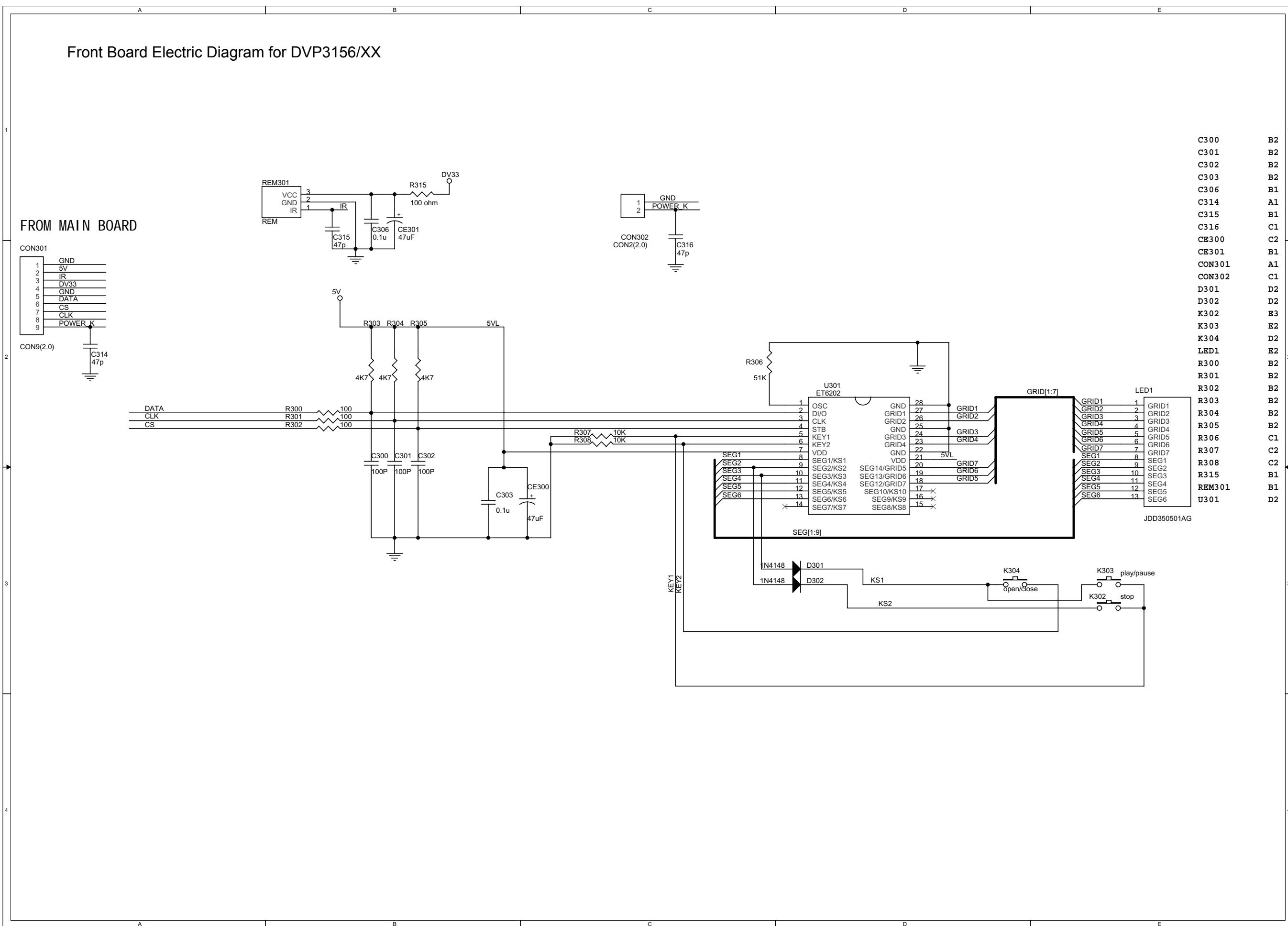


Switch Board Print-Layout (Bottom Side) for DVP3160K/XX, DVP3166(K)/XX

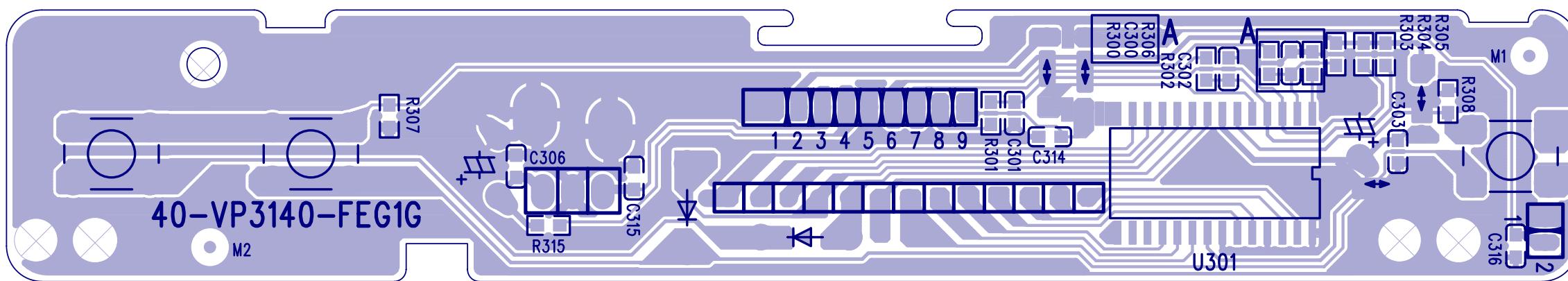


USB+OK Board Print-Layout (Bottom Side) for DVP3160K/XX, DVP3166(K)/XX

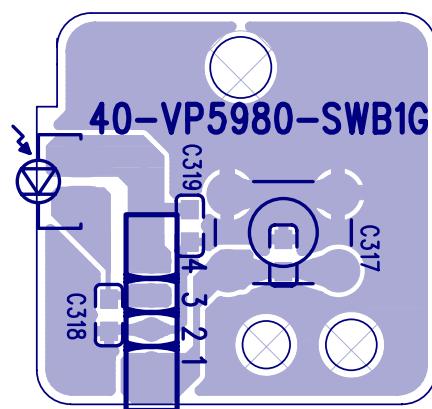


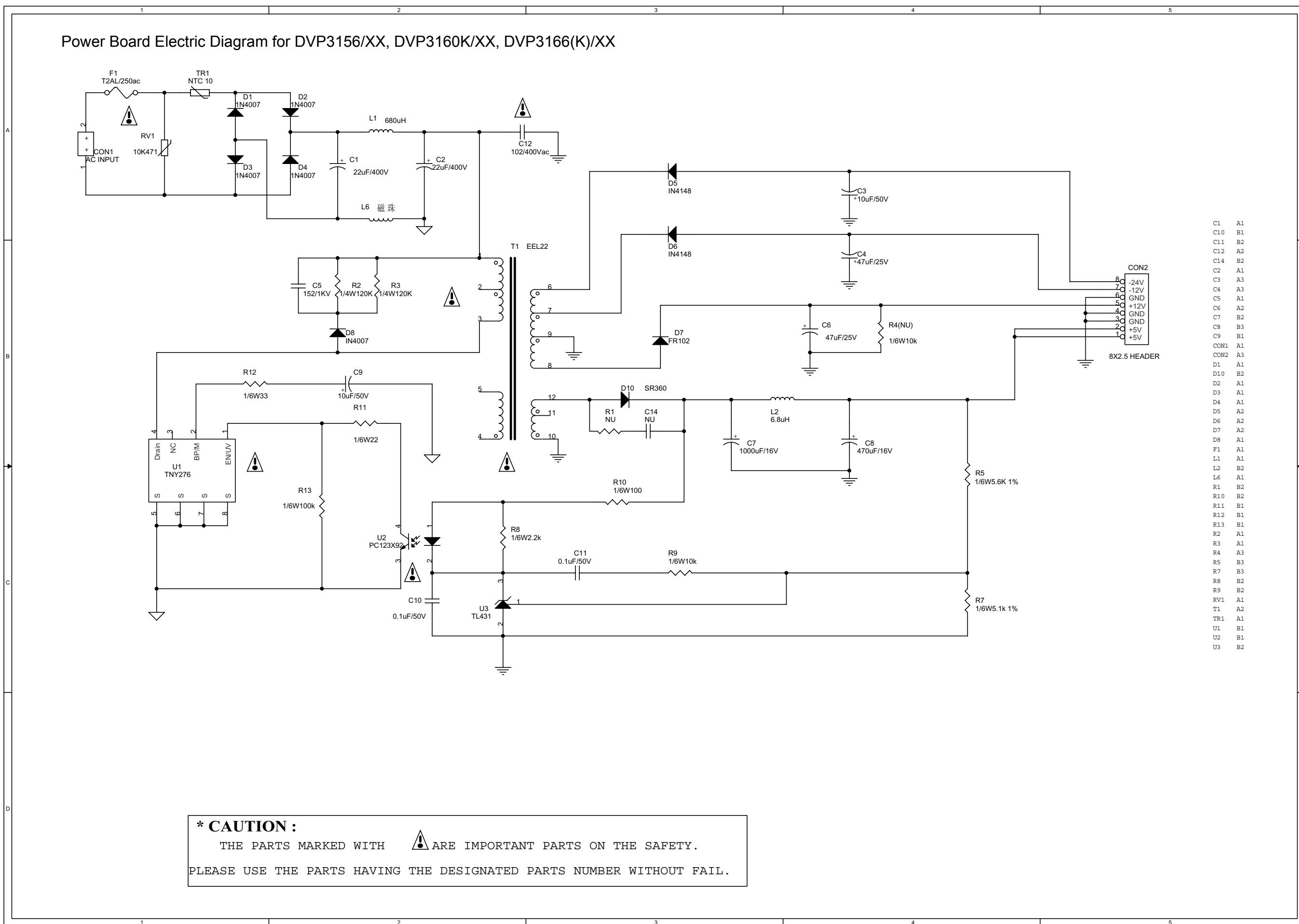


Front Board Print-Layout (Bottom Side) for DVP3156/XX

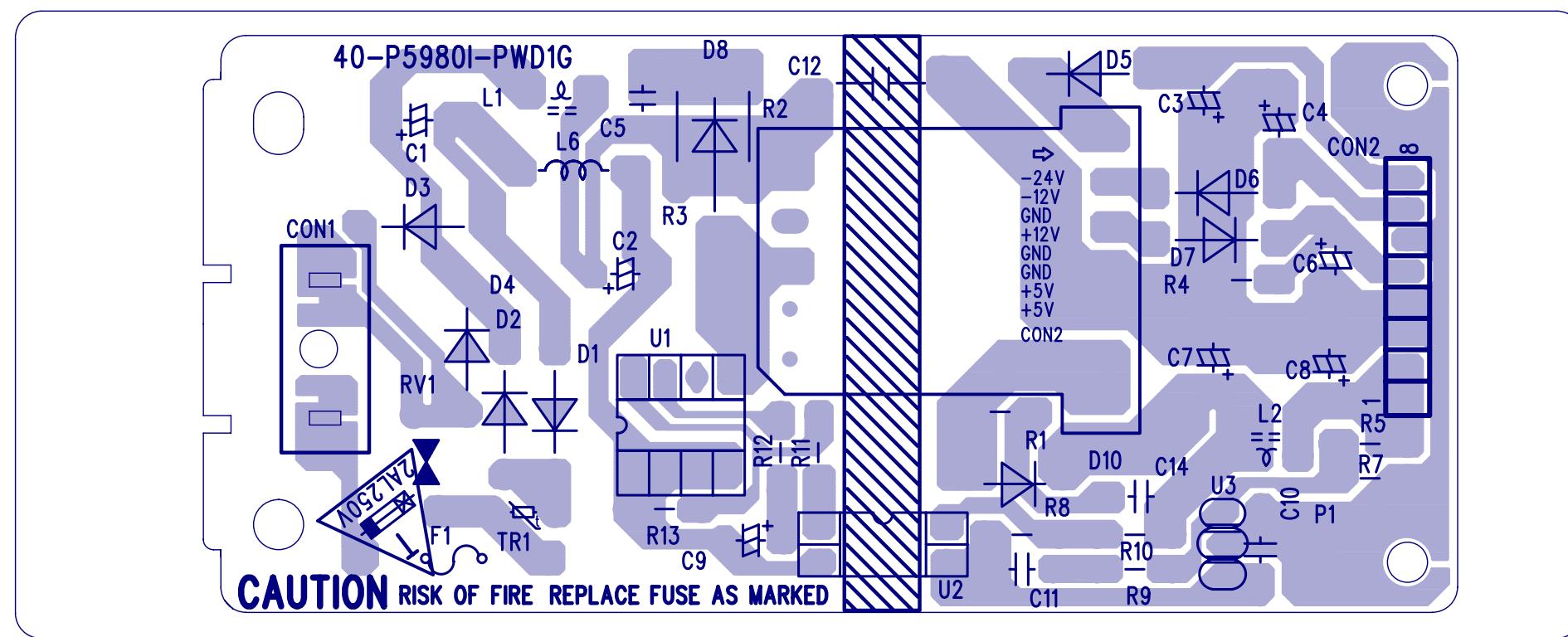


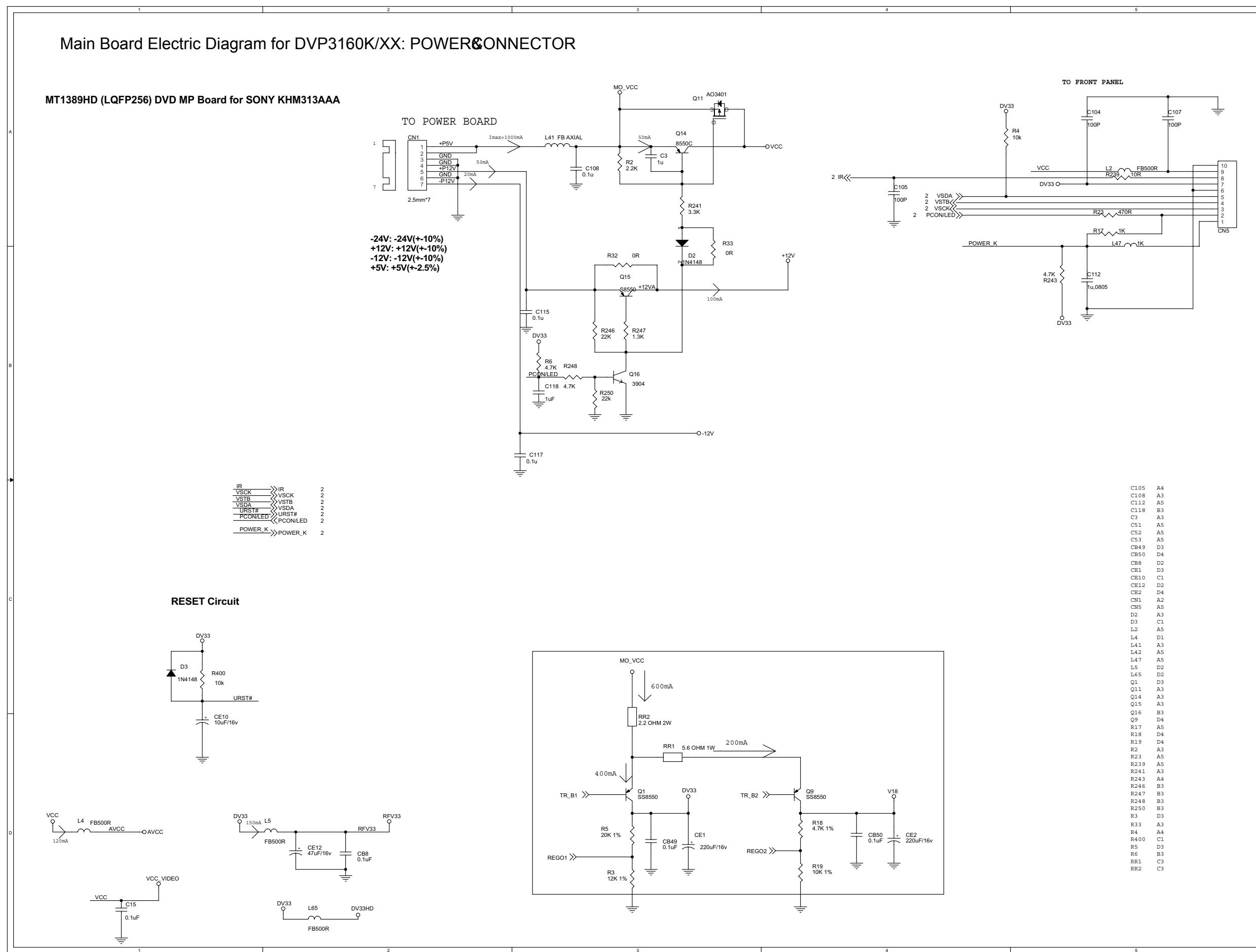
Switch Board Print-Layout (Bottom Side) for DVP3156/XX



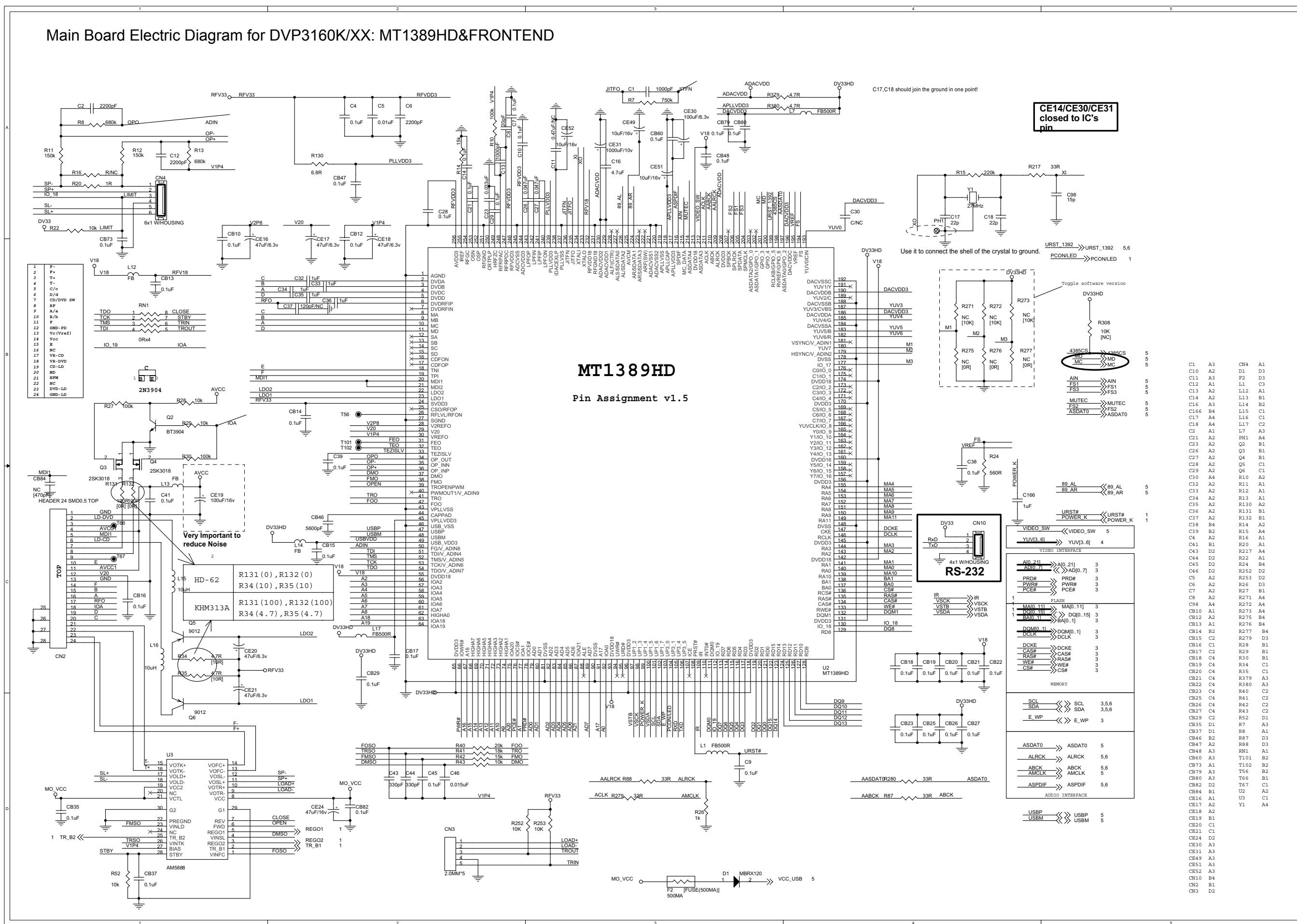


Power Board Print-Layout (Bottom Side) for DVP3156/XX, DVP3160K/XX, DVP3166(K)/XX

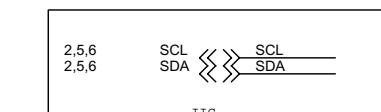
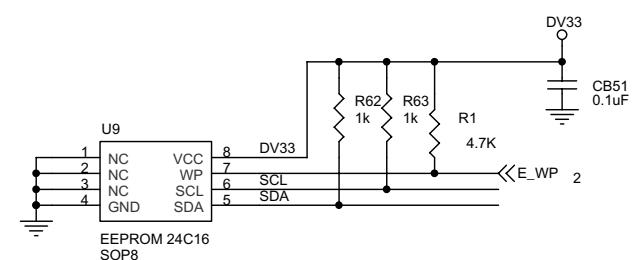
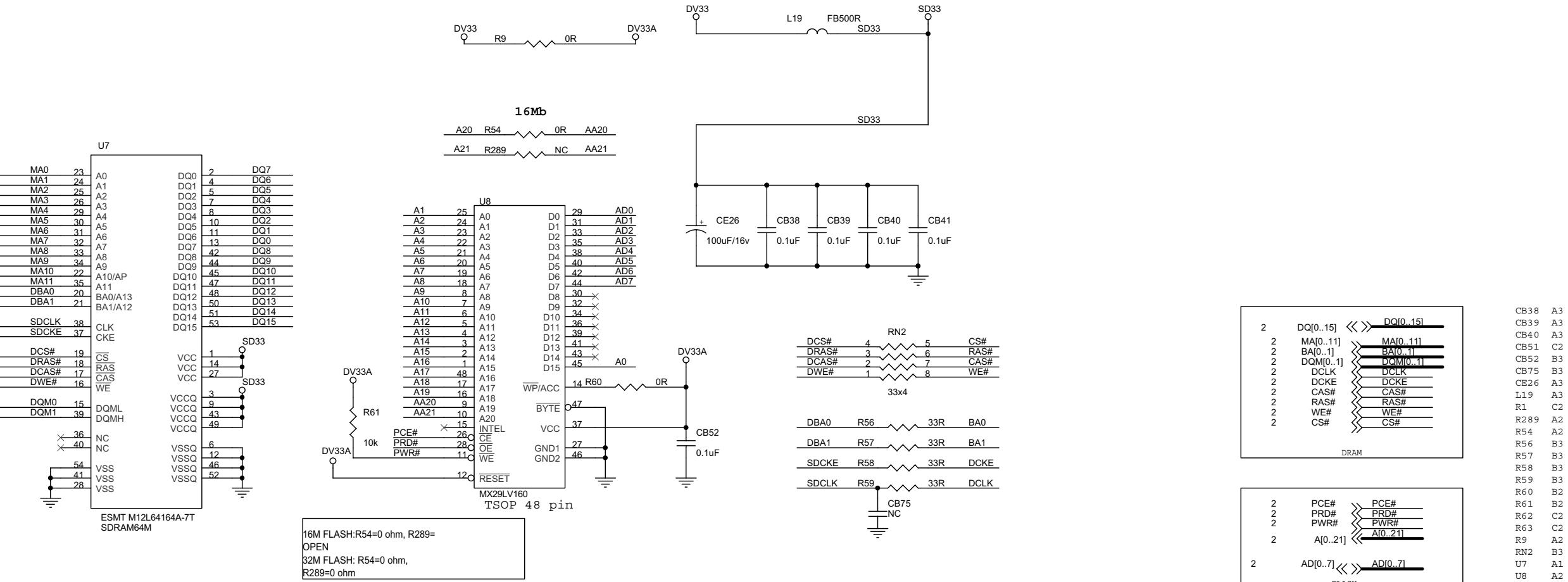




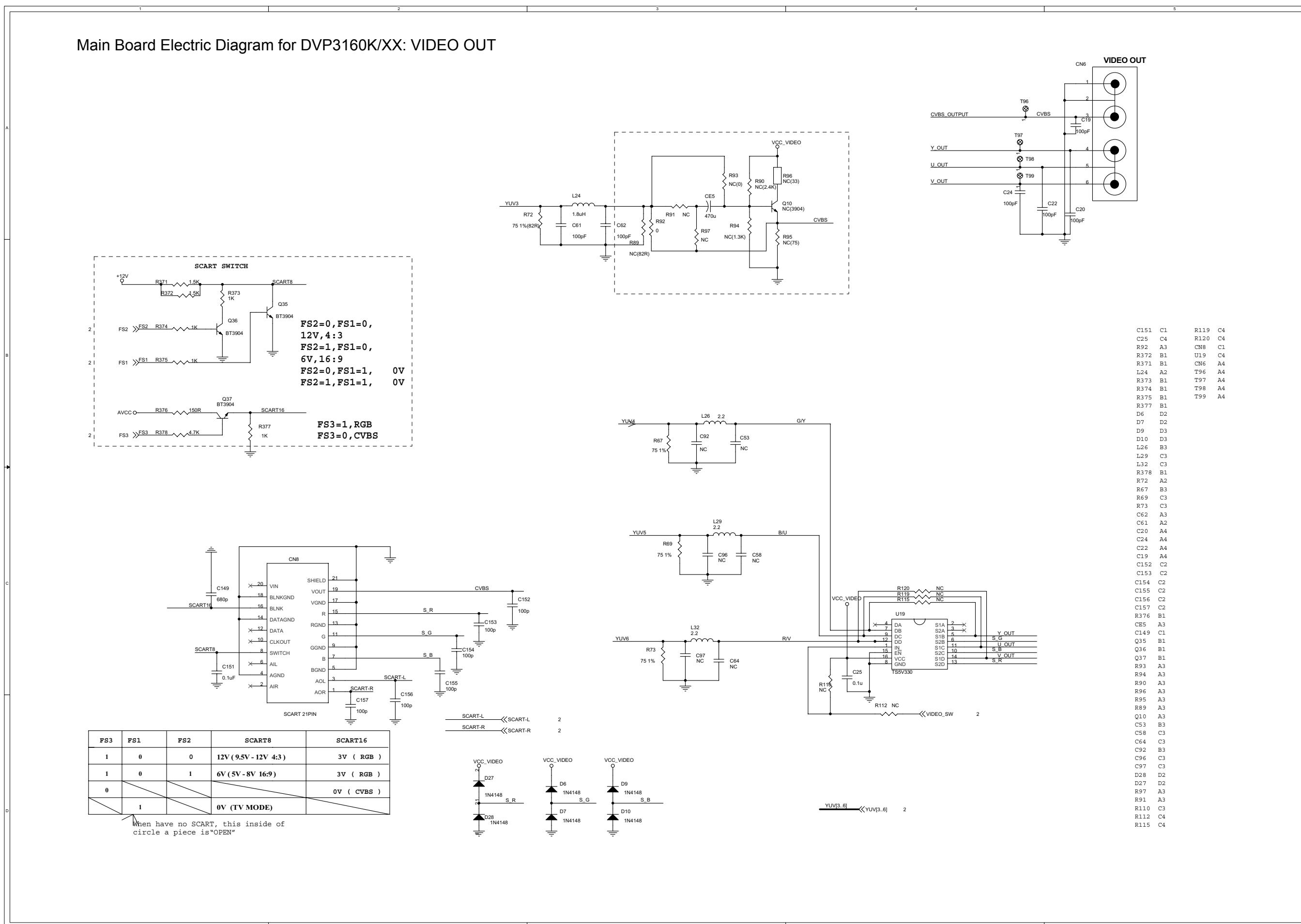
Main Board Electric Diagram for DVP3160K/XX: MT1389HD&FRONTEND



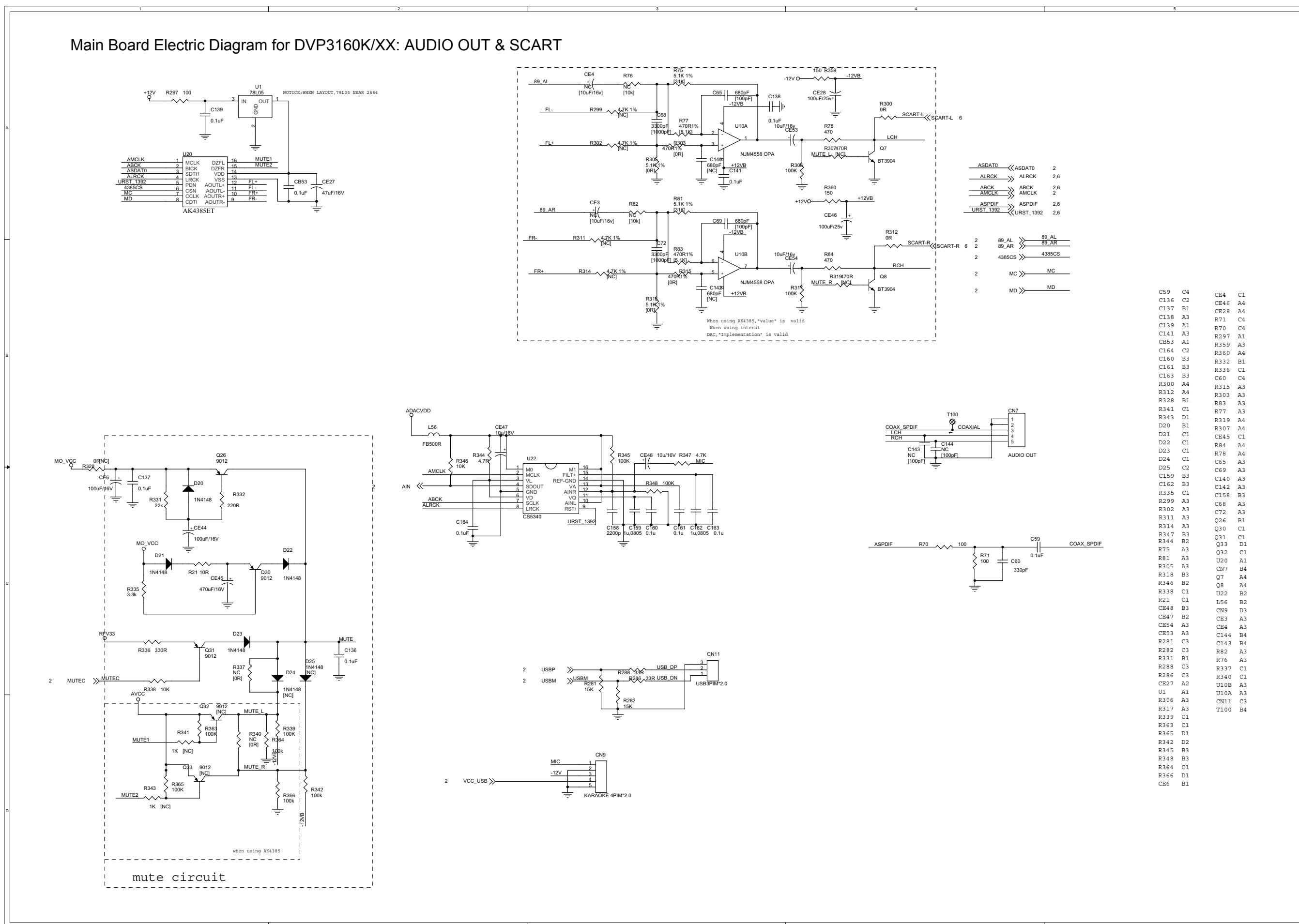
### Main Board Electric Diagram for DVP3160K/XX: SDRAM & FLASH



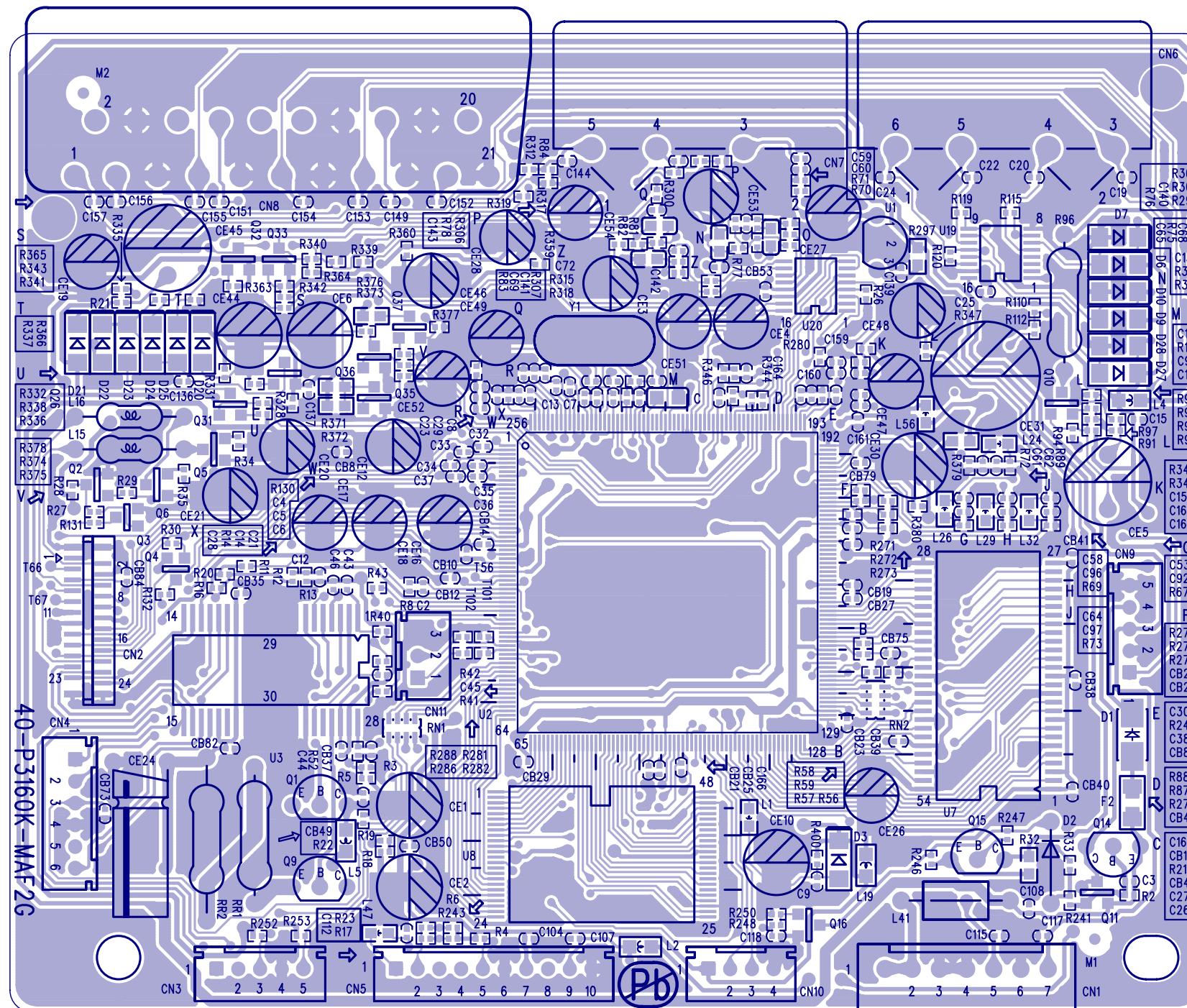
Main Board Electric Diagram for DVP3160K/XX: VIDEO OUT



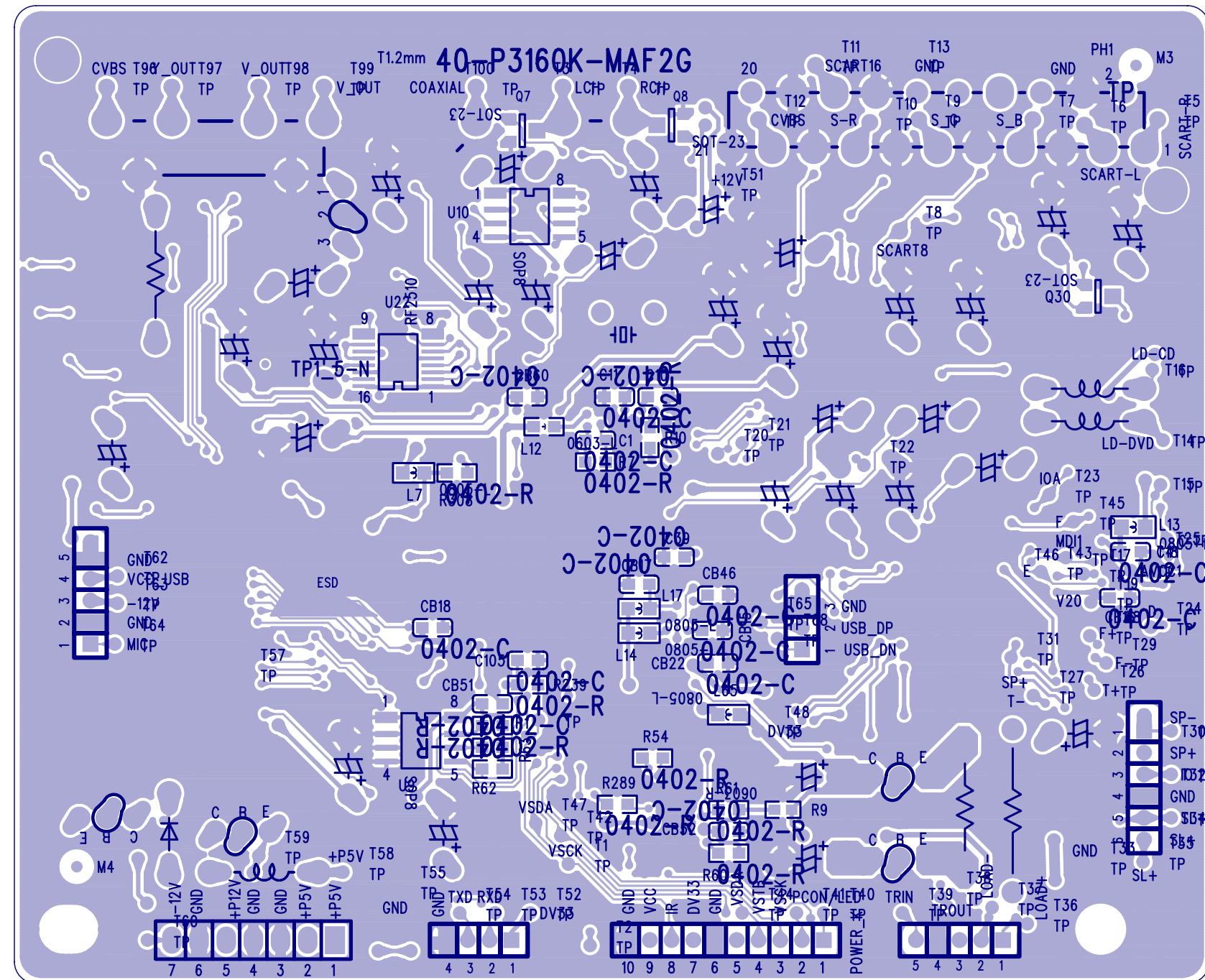
### Main Board Electric Diagram for DVP3160K/XX: AUDIO OUT & SCART

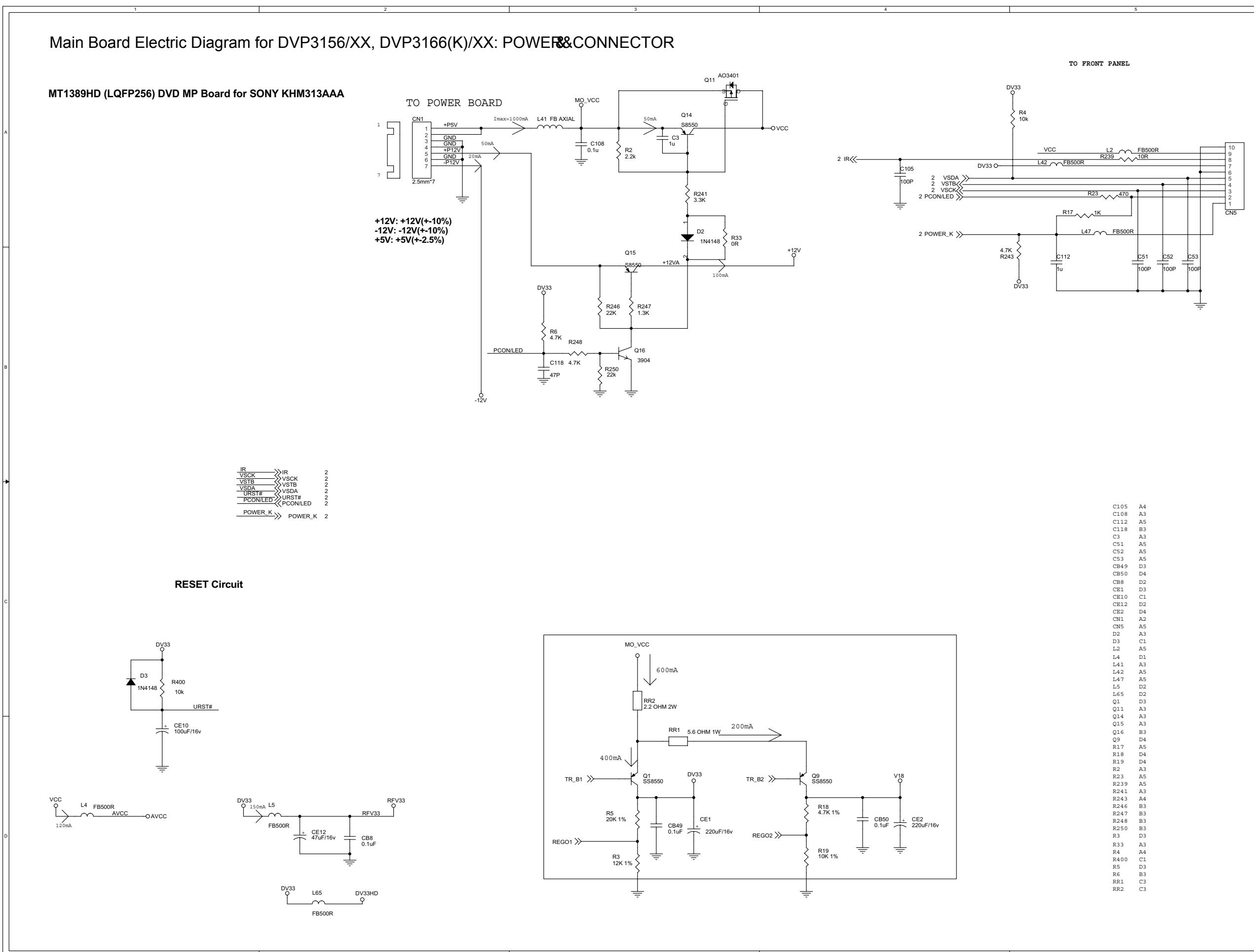


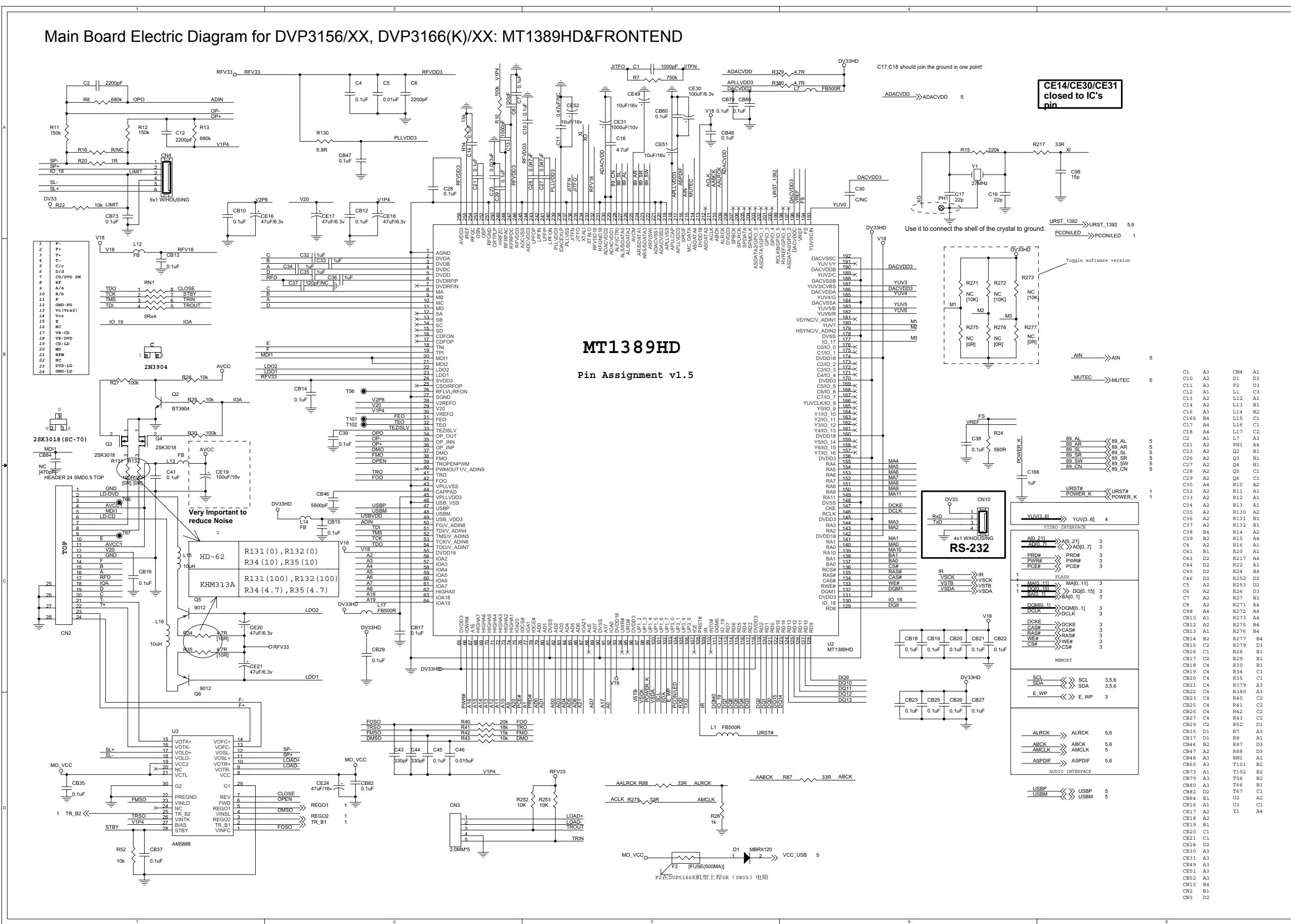
Main Board Print-Layout (Top Side) for DVP3160K/XX



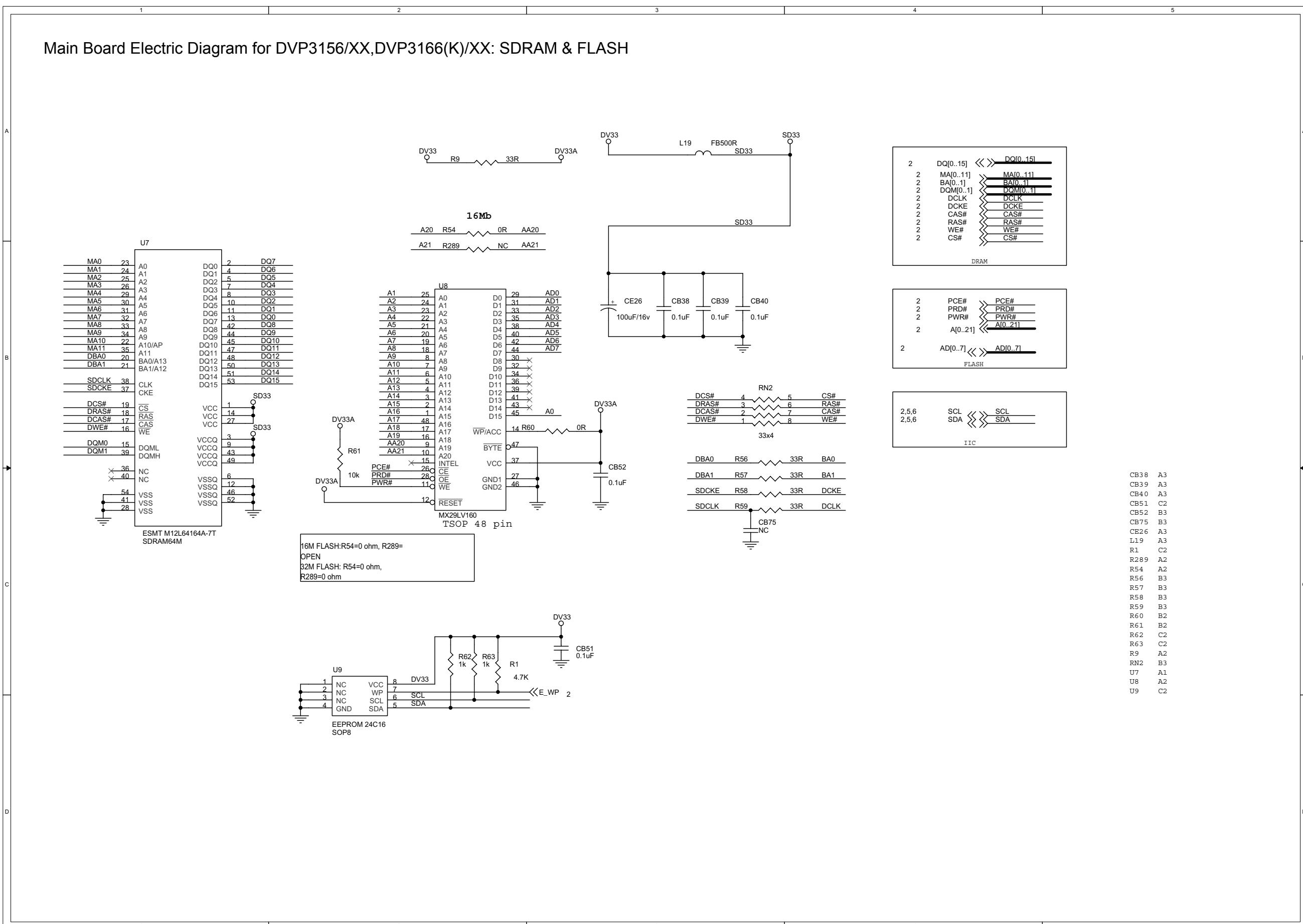
## Main Board Print-Layout (Bottom Side) for DVP3160K/X



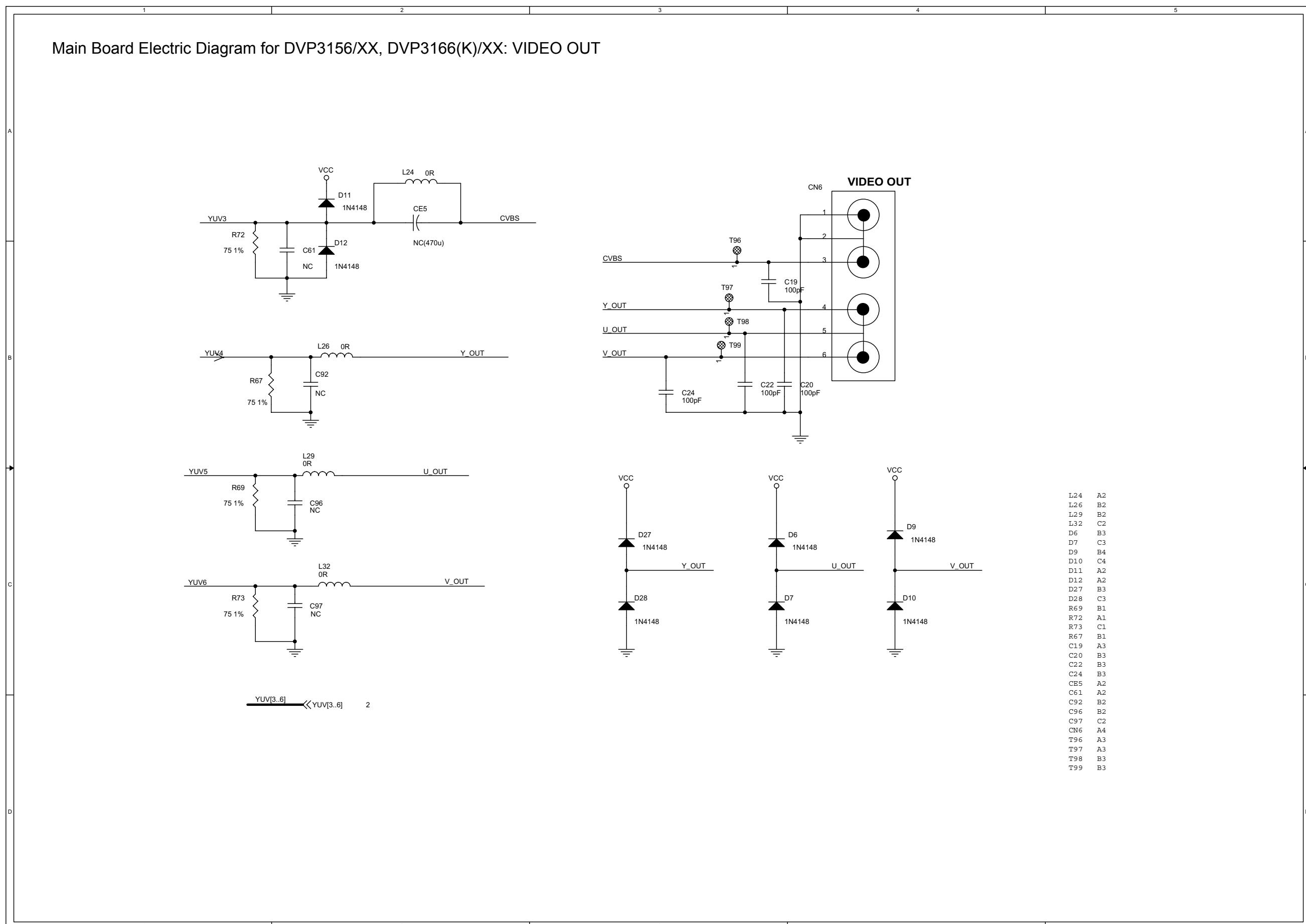




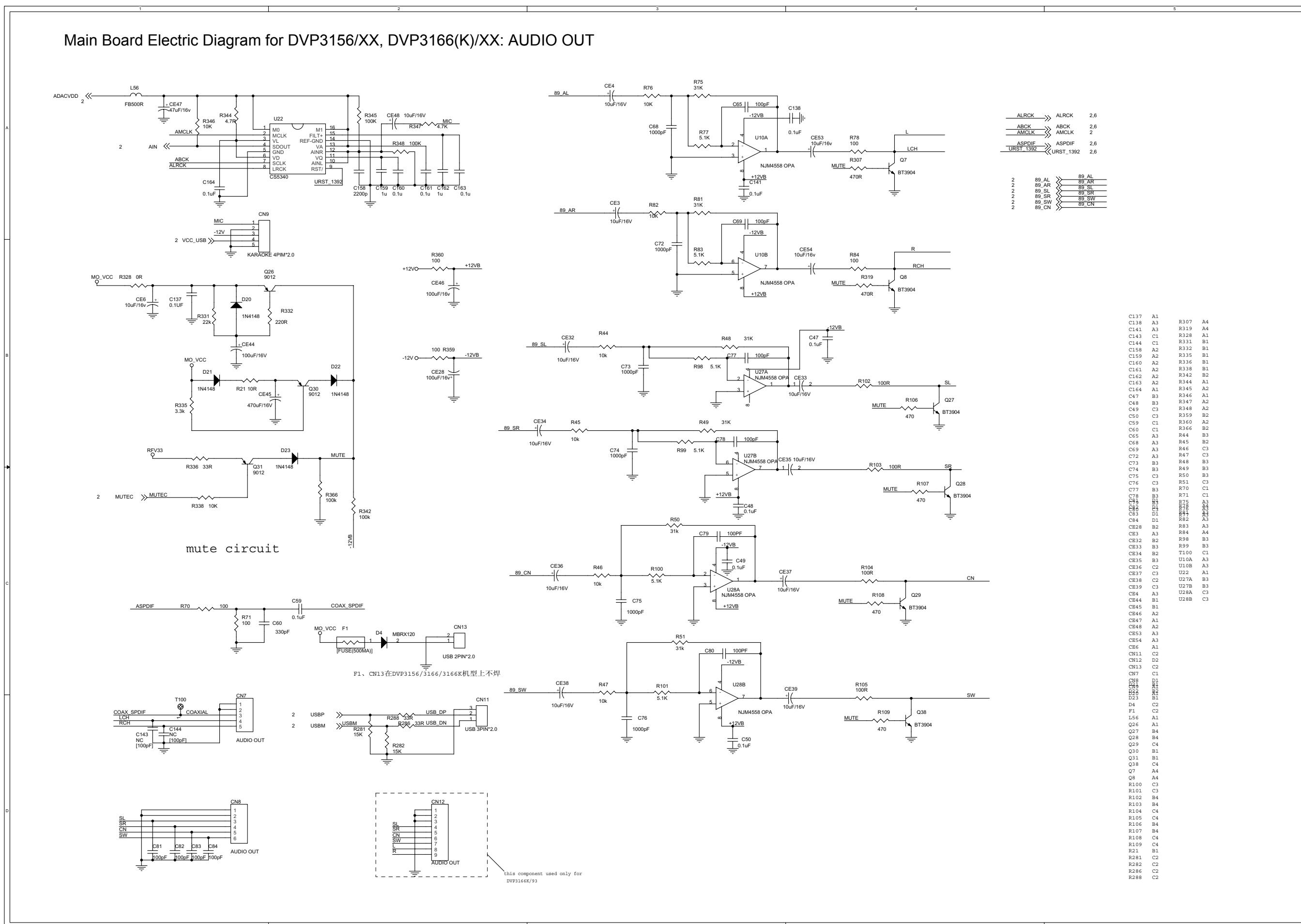
Main Board Electric Diagram for DVP3156/XX,DVP3166(K)/XX: SDRAM & FLASH



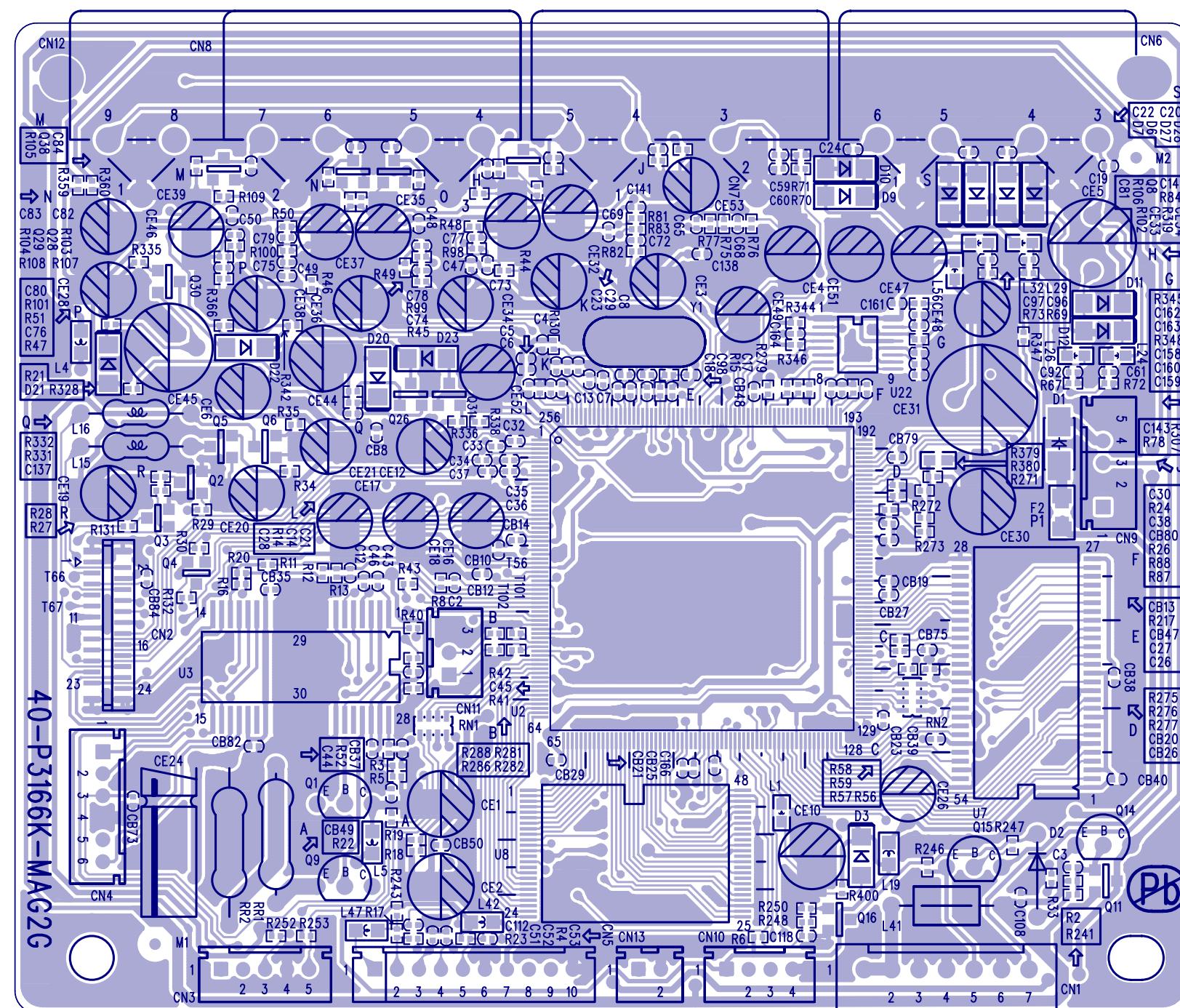
Main Board Electric Diagram for DVP3156/XX, DVP3166(K)/XX: VIDEO OUT



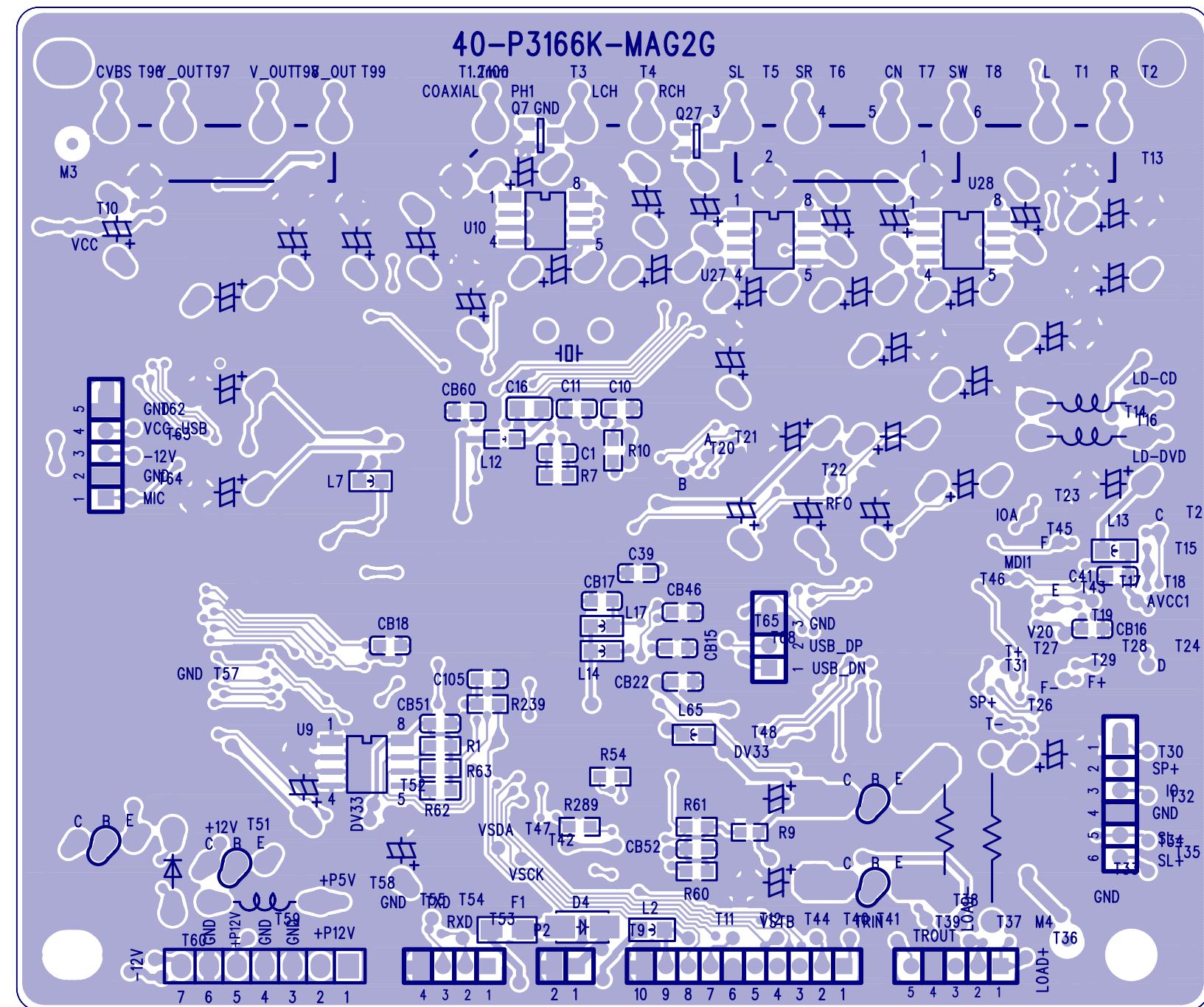
Main Board Electric Diagram for DVP3156/XX, DVP3166(K)/XX: AUDIO OUT



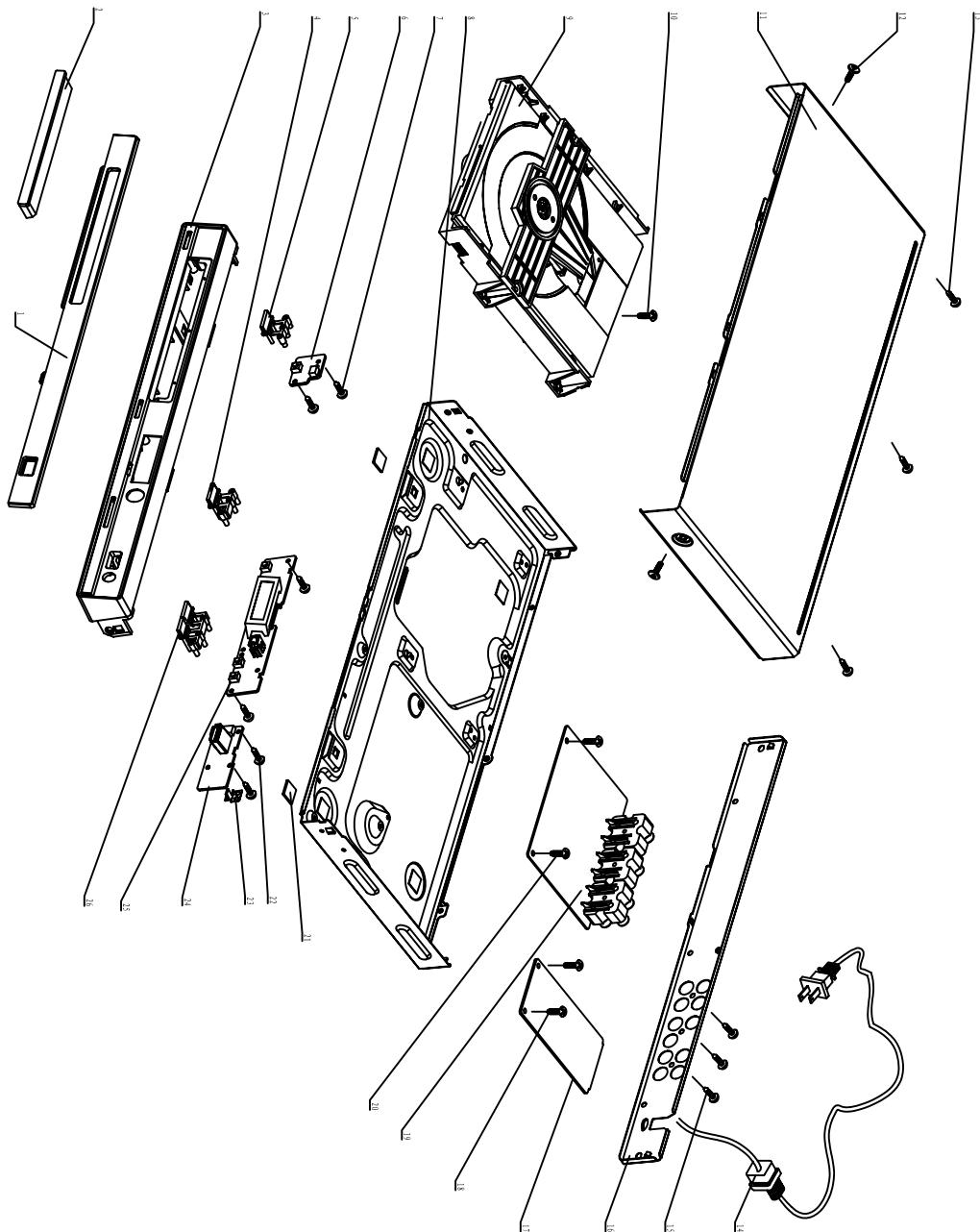
Main Board Print-Layout (Top Side) for DVP3156/XX, DVP3166(K)/XX



## Main Board Print-Layout (Bottom Side) for DVP3156/XX, DVP3166(K)/XX



## DVP3156/XX, DVP3166/XX Mechanical Exploded View



Remark: It's a general Mechanical Exploded View for DVP3156/XX, DVP3166/XX, Detailed information please refer to Model set.

Ass'y1 is the assembled component for location 1,3,4,5,26

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## ENCASING & ACCESSORIES PARTS LIST

No	12NC No.	Part Name	Q'ty
Ass'y1	996510001686	Front panel Ass'y for DVP3166/94 ,DVP3166x/94	1
	996510001679	Front panel Ass'y for DVP3156/93	
2	996510001685	Front Door Ass'y for DVP3166/94,DVP3166x/94	1
	996510001678	Front Door Ass'y for DVP3156/93	
6	996510001188	Ass'y-Switch Board for DVP3166/94,DVP3166x/94	1
	996510001163	Ass'y-Switch Board for DVP3156/93	
8	996510001177	Bottom Cover	1
9	996510001166	Loader	1
11	996510001178	Top Cover	1
14	996510001179	Power Cord for DVP3166/94 ,DVP3166x/94	1
	996510001206	Power Cord for DVP3156/93	
16	996510001687	Rear Cabinet DVP3166/94	1
	996510001681	Rear Cabinet DVP3156/93	
17	996510001200	Ass'y-Power Board for DVP3166/94	1
	996510001673	Ass'y-Power Board for DVP3156/93	
	996510001687	Back Panel for DVP3166/94,DVP3166x/94	
18	996510001200	Ass'y Power Board for DVP3166/94,DVP3166x/94	1
19	996510001683	Ass'y-Main Board for DVP3166/94 ,DVP3166x/94	1
	996510001672	Ass'y-Main Board for DVP3156/93	
21	996510001680	Rubber Pad	1
23	/	Grounding Pad	1
24	996510001674	Ass'y-USB Board	1
25	996510001189	Ass'y-Front Board for DVP3166/94	1
	996510001164	Ass'y-Front Board for DVP3156/93	
26	996510001674	Ass'y - US BD	1
27	996510001189	Ass'y-FB BD DVP3166/94,DVP3166x/94	1

## SCREW LIST

No	12NC No.	Part Name	Q'ty
1	/	S/T SCREW B 2.6 X 8 BF	2
7	/	MACHINE SCREW	1
10	/	M/C SCREW TRIANGLE W 3 X 6	2
12	/	TRIANGLE M/C SCREW B 3 X 6	3
13	/	S/T SCREW B 3 X 8 BF	3
15	/	TRIANGLE M/C SCREW B 3 X 6	2
18	/	TRIANGLE M/C SCREW B 3 X 6	2
20	/	S/T SCREW B 2.6 X 8 BF	2
22	/	RIGHT BUFFER	1

## Accessory

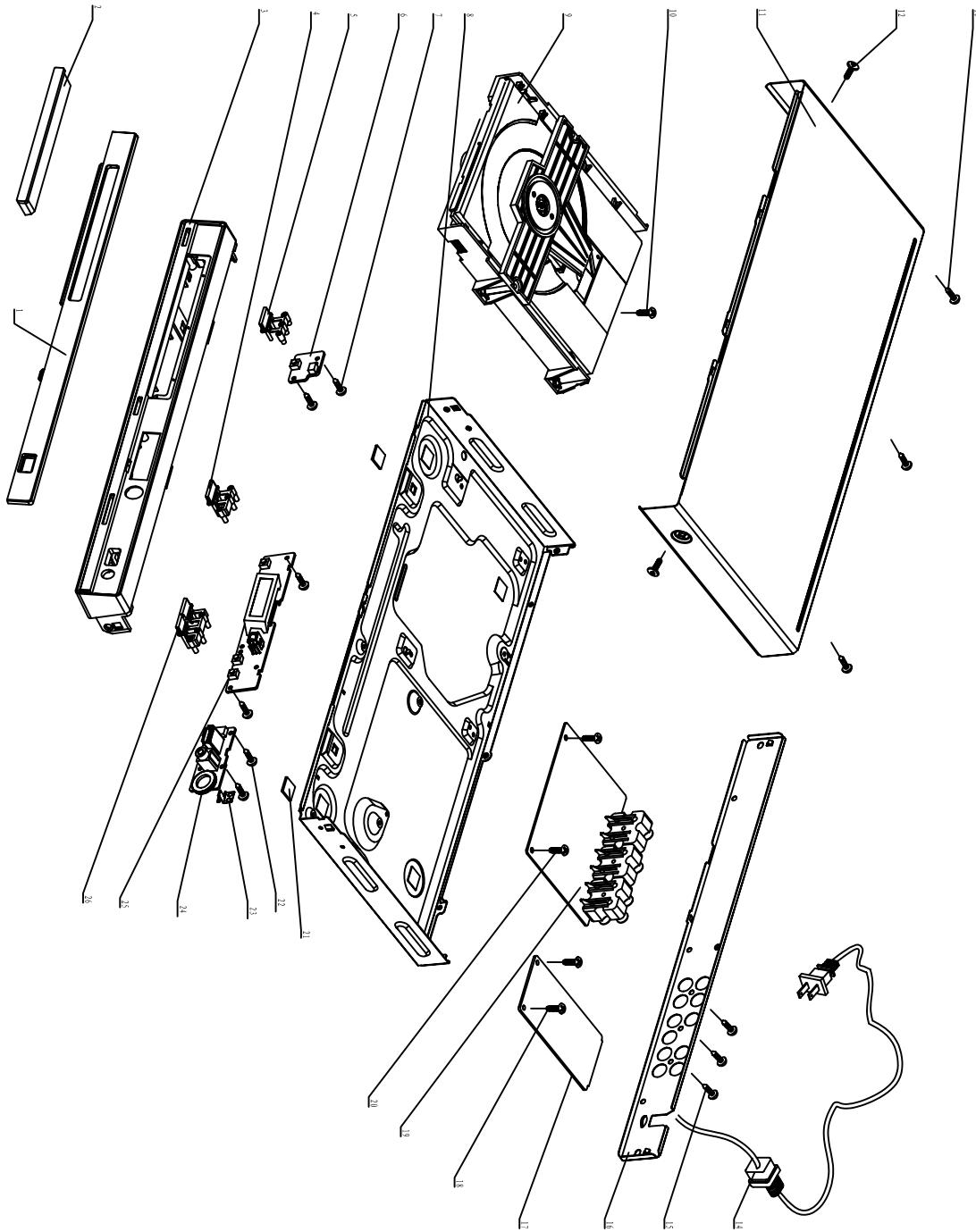
RC	996510001675	REMOTE CONTROL for DVP3156/93	1
RC	996500035359	REMOTE CONTROL for DVP3166/94	1
AV	996510001106	VIDEO CABLE 1500mm	1
DBOX	996510001677	DISPLAY BOX for DVP3156/93	1
LBuffer	996510001203	RIGHT BUFFER	1
Rbuffer	996510001202	LEFT BUFFER	1

## Cable

CN601	996510001676	CABLE 5PIN PITCH=2.0	1
CON2	996510001169	TJC3-7Y/SCN-7P L=80MM	1
CON3	996510001172	HS 9PIN	1
CON3	996510001171	2P HS for DVP3156/93	1
CN1	996510001169	TJC3-7Y/SCN-7P L=80MM	1
CN2	996510001168	24PIN HS 1	1
CN4	996510001170	6PIN HS 1	1
CN1	996510001193	PH-2Y/SAW-2P L=170MM for DVP3166/94	1
MAIN	996510001192	PH-5Y/PH-5Y L=130MM	1
5P	996510001192	PH-5Y/PH-5Y L=130MM DVP3166/94,DVP3166x/94	1

Note:Only the parts mentioned in this list are normal service spare parts

## DVP3160K/XX,DVP3166K/XX Mechanical Exploded View



Remark: It's a general Mechanical Exploded View for DVP3160K/XX, DVP3166K/XX , Detailed information please refer to Model set.

Ass'y1 is the assembled component for location 1,3,4,5,26

**ENCASING & ACCESSORIES PARTS LIST****SCREW LIST**

No	12NC No.	Part Name	Q'ty	No	12NC No.	Part Name	Q'ty
Ass'y1	996510001196	Front panel Ass'y for DVP3160K/55/77/78	1	7	/	S/T SCREW B 2.6 X 8 BF	2
	/	Front panel Ass'y for DVP3166K/93		10	/	MACHINE SCREW	1
2	996510001685	Front Door Ass'y	1	12	/	M/C SCREW TRIANGLE W 3 X 6	2
6	996510001188	Ass'y-Switch Board	1	13	/	TRIANGLE M/C SCREW B 3 X 6	3
8	996510001177	Bottom Cabinet	1	15	/	S/T SCREW B 3 X 8 BF	3
9	996510001166	Loader	1	17	/	TRIANGLE M/C SCREW B 3 X 6	2
11	996510001178	Top Cover	1	20	/	TRIANGLE M/C SCREW B 3 X 6	2
				22	/	S/T SCREW B 2.6 X 8 BF	2
14	996510001175	Power Cord for DVP3160K/55	1				
	996510001227	Power Cord for DVP3160K/77					
	/	Power Cord for DVP3160K/78					
	996510001206	Power Cord for DVP3166K/93					
16	996510001198	Rear Cabinet for DVP3160K/55	1				
	/	Rear Cabinet for DVP3160K/77/78					
	/	Rear Cabinet for DVP3166K/93					
18	996510001200	Ass'y-Power Board for DVP3160K	1				
		/77/78, DVP3166K/93					
	996510001190	Ass'y-Power Board for DVP3160K/55					
19	996510001187	Ass'y-Main Board for DVP3160K/55	1				
		/77/78					
	/	Ass'y-Main Board for DVP3166K/93					
21	996510001680	Rubber Pad	2				
23	/	Grounding Pad	1				
24	996510001191	Ass'y-USB+OK Board	1				
25	996510001189	Ass'y-Front Board	1				

Note: Only the parts mentioned in this list are normal service spare parts

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### **REVISION LIST**

#### **Version 1.0**

\*Initial release

#### **Version 1.1**

Include DVP3166X/ 94 models

Remark: This Service manual only for Philips Service repairment, Please  
Don't transmitt or forward it to others.